PAIN MANAGEMENT
May 2004

Abbuhl, F. B., and D. B. Reed. "Time to analgesia for patients with painful extremity injuries transported to the emergency department by ambulance." *Prehospital Emergency Care.* 7, no. 4(2003): 445-7 UI 14582095.

OBJECTIVE: To measure the time to analgesia for patients with painful, isolated extremity injuries brought to the emergency department (ED) by emergency medical services (EMS). METHODS: A retrospective chart review of all patients presenting with isolated, painful extremity injuries during an 18-month period to a Level 1 trauma center. Medical records were reviewed by diagnostic codes for extremity injuries. Inclusion criteria: patients 18 years or older transported to the ED by EMS; isolated, painful extremity injuries; received parenteral analgesia in the ED or by EMS. Excluded: multiple trauma patients, interfacility transfers, hemodynamically unstable patients, head-injured patients, intoxicated patients, and patients with mental status changes. Data elements: age, sex, EMS arrival time, EMS medication time, hospital triage time, and ED medication time. All "times to analgesia" were calculated from the EMS arrival time on scene. RESULTS: Extremity injuries were identified in 706 patients. Of these, 104 patients with painful, isolated, extremity injuries met all inclusion criteria. Thirteen (12.5%) of 104 received analgesia by EMS during prehospital care. Ninety-one patients (88%) first received parenteral analgesia in the ED. The mean time to analgesia for EMS treated patients was 23 minutes (95% CI 16.7-30.2). Mean time to analgesia for patients treated in the ED was 113 minutes (95% CI 99.2-128.1). Mean time to analgesia after triage in this group was 75 minutes (95% CI 60.8-89.7). CONCLUSION: In this study, patients received analgesia sooner when administered by EMS during prehospital care. There was a significant time delay after triage for patients first medicated in the ED.

al'Absi, M., and K. L. Petersen. "Blood pressure but not cortisol mediates stress effects on subsequent pain perception in healthy men and women." *Pain.* 106, no. 3(2003): 285-95 UI 14659511.

Research has demonstrated that exposure to acute stress may attenuate pain perception. Mechanisms of this effect in humans have not been determined. This study was conducted to determine the extent to which psychophysiological and adrenocortical responses to acute stress predict subsequent pain perception. One hundred and fifty-two healthy participants (80 women) were assigned to one of two conditions: rest followed by the cold pressor test (CPT; N=76) or stress followed by CPT (N=76). The stress protocol consisted of a public-speaking challenge. Participants rated their pain every 15 s during a 90-s hand CPT (0-4 degrees C), and they completed the short form of the McGill Pain Questionnaire. Salivary cortisol, mood, blood pressure (BP), and impedance cardiography measures were collected in both conditions. Women had lower BP and reported greater pain than men in both

conditions (ps<0.01). Participants in the stress condition reported less pain during CPT than those in the rest condition (p=0.02). Regression analyses demonstrated that the stress effect on pain ratings was mediated by systolic BP level during stress; however, cortisol responses did not affect this relationship. Mood changes were independent predictors of pain. The study demonstrates that BP changes in response to stress mediate the stress-induced attenuation of pain perception.

Alonso-Serra, H. M., et al. "Prehospital pain management." *Prehospital Emergency Care.* 7, no. 4(2003): 482-8 UI 14582104.

Anand, P. "Neurotrophic factors and their receptors in human sensory neuropathies." *Progress in Brain Research.* 146(2004): 477-92 UI 14699981.

Neurotrophic factors may play key roles in pathophysiological mechanisms of human neuropathies. Nerve growth factor (NGF) is trophic to small-diameter sensory fibers and regulates nociception. This review focuses on sensory dysfunction and the potential of neurotrophic treatments. Genetic neuropathy. Mutations of the NGF high-affinity receptor tyrosine kinase A (Trk A) have been found in congenital insensitivity to pain and anhidrosis; these are likely to be partial loss-of-function mutations, as axon-reflex vasodilatation and sweating can be elicited albeit reduced, suggesting rhNGF could restore nociception in some patients. Leprous neuropathy. Decreased NGF in leprosy skin may explain cutaneous hypoalgesia even with inflammation and rhNGF may restore sensation, as spared nerve fibers show Trk A-staining. Diabetic neuropathy. NGF is depleted in early human diabetic neuropathy skin, in correlation with dysfunction of nociceptor fibers. We proposed rhNGF prophylaxis may prevent diabetic foot ulceration. Clinical trials have been disappointed, probably related to difficulty delivering adequate doses and need for multiple trophic factors. NGF and glial cell line-derived neurotrophic factor (GDNF) are both produced by basal keratinocytes and neurotrophin (NT-3) by suprabasal keratinocytes: relative mRNA expression was significantly lower in early diabetic neuropathy skin compared to controls, for NGF (P < 0.02), BDNF (P < 0.05), NT-3 (P < 0.05), GDNF (< 0.02), but not NT4/5, Trk A or p75 neurotrophin receptor (all P > 0.05). Posttranslational modifications of mature and pro-NGF may also affect bioactivity and immunoreactivity. A 53 kD band that could correspond to a prepro-NGF-like molecule was reduced in diabetic skin. Traumatic neuropathy and pain. While NGF levels are acutely reduced in injured nerve trunks, neuropathic patients with chronic skin hyperalgesia and allodynia show marked local increases of NGF levels; here anti-NGF agents may provide analgesia. Physiological combinations of NGF, NT-3 and GDNF, to mimic a 'surrogate target organ', may provide a novel 'homeostatic' approach to prevent the development and ameliorate intractable neuropathic pain (e.g., at painful amputation stumps). [References: 98]

Anonymous. "COX-2 inhibitor improves pain outcomes." *Or Manager.* 20, no. 1(2004): 21 UI 14740474.

Anonymous. "Encouraging better postop pain relief." *Or Manager.* 20, no. 1(2004): 24-5 UI 14740477.

Anonymous. "Home care agency implements pain management procedures." *Performance Improvement Advisor.* 7, no. 12(2003): 157-9, 153 UI 14748130.

Pain management was an often overlooked aspect of health care until 2000, when the JCAHO included standards for assessing and managing pain in its accreditation criteria. Hospitals, home care agencies, nursing homes, and other organizations suddenly found themselves with a large need to educate employees and patients about effective pain management techniques.

Anonymous. "Improving pain control for lap choles." *Or Manager.* 20, no. 1(2004): 27-9 UI 14740478.

Anonymous. "Marijuana compound effective against pain." *AIDS Patient Care & Stds.* 17, no. 12(2003): 672 UI 14748369.

Anonymous. "Nicorandil for angina--an update." *Drug & Therapeutics Bulletin.* 41, no. 11(2003): 86-8 UI 14658416.

Around 2 million people in the UK have angina pectoris and are therefore at high risk of severe coronary events such as myocardial infarction (MI) or sudden death. Conventional management of patients with stable angina includes glyceryl trinitrate, a beta-blocker, aspirin and a statin, with the aim of controlling symptoms and reducing the risk of a coronary event. For patients unable to tolerate a beta-blocker, the choice is less clear but calcium channel blockers and long-acting nitrates provide effective symptom control. Another option is nicorandil (Ikorel--Rhone-Poulenc Rorer), a potassium channel activator licensed for the "prevention and long term treatment of chronic stable angina pectoris". In our review of nicorandil 8 years ago, we concluded that it provided symptom control that was as good as, but no better than, other less expensive anti-anginal drugs. Since then, new data have suggested that nicorandil might reduce the frequency of coronary events in patients with stable angina. Here, we consider these findings and reassess the place of nicorandil for patients with angina. [References: 21]

Anonymous. "Summaries for patients. A graded activity program for workers with disabling low back pain." *Annals of Internal Medicine.* 140, no. 2(2004): I24 UI 14734353.

Anonymous. "Winning strategies for banishing heel pain." *Johns Hopkins Medical Letter, Health After 50.* 15, no. 10(2003): 3 UI 14983791.

Ather, M., et al. "Spinal cord stimulation does not change peripheral skin blood flow in patients with neuropathic pain." *European Journal of Anaesthesiology.* 20, no. 9(2003): 736-9 UI 12974596.

BACKGROUND AND OBJECTIVE: Spinal cord stimulation has been used successfully for many years in the management of neuropathic pain. Nociceptive pathways are closely integrated into many autonomic reflexes. The aim was to test the hypothesis that pain relief caused by spinal cord stimulation is related to changes in peripheral skin blood flow. METHODS: Twelve patients with spinal cord stimulators implanted as a treatment for neuropathic pain were entered into the study. Laser Doppler perfusion scanning was used as a direct method for selective measurement of changes in skin (peripheral) blood flow. Measurements were taken before and after the onset of spinal cord stimulation over the site of its sensory projection. The degree of pain relief due to spinal cord stimulation and the skin temperature of each patient were also recorded. RESULTS: Apart from one patient, spinal cord stimulation did not change skin blood flow in a statistically significant manner. CONCLUSIONS: Pain relief due to spinal cord stimulation is not related to changes of skin blood flow.

Axelsson, B., and S. Borup. "Is there an additive analgesic effect of paracetamol at step 3? A double-blind randomized controlled study." *Palliative Medicine.* 17, no. 8(2003): 724-5 UI 14694929.

Beloeil, H., et al. "The median effective dose of nefopam and morphine administered intravenously for postoperative pain after minor surgery: a prospective randomized double-blinded isobolographic study of their analgesic action." *Anesthesia & Analgesia.* 98, no. 2(2004): 395-400, table of contents UI 14742377.

The aim of this study was to characterize the nature of analgesic interaction between nefopam and morphine administered i.v. for postoperative pain after minor surgery. To do so, we defined the median effective analgesic dose (ED(50)) for each drug and also the median ED(50) of their combination and compared them using the isobolographic method. Determination of median effective doses was performed by the up-and-down sequential drug administration in a two-stage study. First, in a prospective, randomized, double-blinded study, we enrolled 60 patients with mild to moderate pain after minor surgery; this was followed by an open study enrolling 30 patients. The end-point was a pain score less than 3 on a Numerical Pain Scale (0-10). Initial doses were 16 mg in group N, 5 mg in group M, and 7.5 mg of N combined with 2.5 mg of M in group N+M. The testing interval was 2 mg in group N, 1 mg in group M, and 1.5 mg of N combined with 0.5 mg of M in group N+M. ED(50) (95% confidence interval) was 5 mg (4-6 mg) for morphine, 18 mg (16-18 mg) for nefopam, and 4 mg (3.5-4.5 mg) with 12 mg (10.5-13.5 mg) for the combination of morphine and nefopam administered at a 3:1 dose ratio. Isobolographic analysis demonstrated a significant infra-additive interaction. The incidence of side effects did not differ significantly among morphine, nefopam, and their combination. These findings suggest that the combination of nefopam and morphine does not offer any advantage compared to each drug administered i.v. or alone after minor surgery. This study is the first to define the ED(50) of nefopam and morphine in postoperative patients. In conclusion, the addition of nefopam has a morphine-sparing effect, but the combination is infra-additive. IMPLICATIONS: Pharmacologic interaction between nefopam and morphine shows infra-additivity but their combination may be clinically useful as morphine consumption is decreased in postoperative patients.

Benoliel, R., et al. "Management of chronic orofacial pain: today and tomorrow." *Compendium of Continuing Education in Dentistry.* 24, no. 12(2003): 909-20, 922-4, 926-8 passim; quiz 932 UI 14733159.

In the facial region, chronic pain syndromes include musculoskeletal pain, neuropathic disorders, vascular pain, and other chronic headaches. Therapy of chronic facial pain syndromes often relies on long-term psychotropic medications that cause severe side effects and offer nontotal pain relief. In this article, therapeutically relevant advances in science, which will change the approach to pain management, are reviewed. Understanding the mechanisms involved in chronic pain enables the clinician to skillfully apply this knowledge when selecting a therapy. [References: 111]

Binns, M. S. "Patellar resurfacing in total knee arthroplasty.[comment]." *Journal of Bone & Joint Surgery - American Volume.* 86-A, no. 1(2004): 185; author reply 185 UI 14711967.

Bogaty, P., et al. "Effect of atorvastatin on exercise-induced myocardial ischemia in patients with stable angina pectoris." *American Journal of Cardiology.* 92, no. 10(2003): 1192-5 UI 14609594.

To investigate whether marked and sustained lipid-lowering in subjects with stable angina pectoris and dyslipidemia reduces exercise-induced myocardial ischemia, 17 subjects were treated with dose-adjusted atorvastatin over 1 year and underwent serial evaluation of exercise electrocardiographic ischemic parameters, serum biomarkers, and brachial artery endothelial function. Endothelial function improved progressively and C-reactive protein, P-selectin, and tissue plasminogen activator inhibitor levels decreased, but there was no decrease in exercise electrocardiographic ischemia.

Borjesson, M., et al. "Nutcracker oesophagus: a double-blind, placebo-controlled, cross-over study of the effects of lansoprazole." *Alimentary Pharmacology & Therapeutics.* 18, no. 11-12(2003): 1129-35 UI 14653833.

BACKGROUND: Nutcracker oesophagus is characterized by high-amplitude oesophageal contractions. Recent data have shown a high prevalence of gastro-oesophageal acid reflux in patients with nutcracker oesophagus and, in open-label trials, patients seemed to benefit from acid suppression. Therefore, it has been suggested that non-cardiac chest pain in patients with nutcracker oesophagus may be related to reflux rather than to the motor abnormality itself. AIMS: To investigate the effect of intensive acid-suppressive treatment on chest pain in patients with nutcracker oesophagus. METHODS: Nineteen patients with nutcracker oesophagus received lansoprazole or placebo in a double-blind, randomized, cross-over study. RESULTS: Significant reductions in pain intensity ($P < 0.006$) and pain duration ($P < 0.05$) were registered during the study. The magnitude of symptom relief achieved with lansoprazole did not differ significantly from that achieved with placebo. The motility pattern did not change during the study. CONCLUSIONS: This study does not prove that acid-suppressive therapy is effective for pain relief in nutcracker oesophagus. As the amelioration of pain was not accompanied by any change in the nutcracker oesophagus pattern, it is unlikely that the high-amplitude oesophageal contractions are the cause of pain. Thus, the possible role of acid in the pathophysiology of pain in nutcracker oesophagus needs further study.

Bradley, R. H., et al. "Efficacy of venlafaxine for the long term treatment of chronic pain with associated major depressive disorder." *American Journal of Therapeutics.* 10, no. 5(2003): 318-23 UI 12975715.

BACKGROUND: This was an open-label, single-center study of the long-term efficacy and effectiveness of venlafaxine extended release (XR) in the treatment of chronic pain and depression in outpatients. All patients have been diagnosed with major depressive disorder (MDD) of various types, with or without chronic pain, and had previously failed treatment with either tricyclic antidepressants (TCAs) or selective serotonin reuptake inhibitors (SSRIs). METHODS: Efficacy of treatment was determined using the 21-item Hamilton Rating Scale for Depression (HAMD-21), the Visual Analogue Scale (VAS) for the evaluation of pain, and a 12-item quality of life scale (QOL). Patients were treated in an unblended open trial for 1 year with 150 mg or more of venlafaxine XR once daily. RESULTS: After 1 year of treatment, 21-item Hamilton Rating Scale for Depression, Visual Analogue Scale, and quality of life scores were significantly improved from permanent baseline scores. CONCLUSION: These data show long-term efficacy and effectiveness of venlafaxine XR, a serotonin (5-HT) and norepinephrine (NE) and dopamine (DA) reuptake inhibitor antidepressant agent, having analgesic properties.

Brown, C. "Surgical treatment of trigeminal neuralgia." *AORN Journal.* 78, no. 5(2003): 744-58; quiz 759-62 UI 14621949.

TRIGEMINAL NEURALGIA, which is unilateral electric shock or knifelike pain occurring in one or more branches of the trigeminal nerve, is evoked by stimulation of the face, lips, or gums caused by activities such as shaving, brushing the teeth, or moving trigger zones. IT GENERALLY IS ACCEPTED that classic trigeminal neuralgia is a consequence of vascular compression and demyelination of the trigeminal nerve. Although medical therapy is available, it gradually becomes less effective because of the progressive nature of trigeminal neuralgia. MICROVASCULAR DECOMPRESSION of the trigeminal nerve to treat trigeminal neuralgia is discussed in this article. Perioperative care, expected course of recovery, and potential complications are described. [References: 9]

Chelly, J. E., et al. "The safety and efficacy of a fentanyl patient-controlled transdermal system for acute postoperative analgesia: a multicenter, placebo-controlled trial." *Anesthesia & Analgesia.* 98, no. 2(2004): 427-33, table of contents UI 14742382.

A noninvasive method of delivery of parenteral opioids for management of acute pain may offer logistic advantages for patients and nursing staff. A patient-controlled transdermal system (PCTS) under development consists of a preprogrammed, self-contained drug-delivery system that uses electrotransport technology (E-TRANS, ALZA Corp, Mountain View, CA) to deliver 40 micro g of fentanyl HCl over 10 min per on-demand dose for patient-controlled analgesia (PCA). In this randomized, double-blinded, placebo-controlled trial we compared the efficacy and safety of on-demand fentanyl HCl PCTS 40 microg against placebo for postoperative pain up to 24 h after major abdominal, orthopedic, or thoracic surgery in 205 patients. The primary efficacy measurement was the percentage of patients withdrawn from the study because of inadequate analgesia after completing at least 3 h of treatment. Secondary efficacy measures included mean pain intensity (using visual analog scales), patient global assessments, and investigator global assessments. Of 189 patients considered evaluable for efficacy, 25% of patients in the fentanyl HCl PCTS 40 microg group withdrew because of inadequate analgesia, compared with 40.4% of the placebo group ($P < 0.05$). Use of fentanyl HCl PCTS 40 micro g was associated with lower VAS scores and higher mean patient and investigator global assessment scores compared with placebo. No patient experienced clinically relevant respiratory depression. This study showed that a fentanyl HCl PCTS 40 microg for PCA was superior to placebo and well tolerated for the control of moderate to severe postoperative pain for up to 24 h after major surgery. IMPLICATIONS: This multicenter, randomized, double-blinded, placebo-controlled trial showed that an on-demand fentanyl HCl patient-controlled transdermal system (PCTS) was superior to placebo and well tolerated for the control of moderate to severe postoperative pain for up to 24 h after major surgery. This fentanyl HCl PCTS is a preprogrammed, needle free, self-contained drug-delivery system that uses electrotransport technology (iontophoresis) to deliver 40 microg of fentanyl per on-demand dose.

Chiron, B., et al. "Postdural puncture headache in a parturient with sickle cell disease: use of an epidural colloid patch." *Canadian Journal of Anaesthesia.* 50, no. 8(2003): 812-4 UI 14525820.

PURPOSE: To report the injection of a colloid in the epidural space as an alternative to an epidural blood patch in a woman with sickle cell disease. CLINICAL FEATURES: A Cesarean delivery was performed under spinal anesthesia in a 32-yr-old woman with severe sickle cell disease and a past medical history of vaso-occlusive crisis. In the postoperative period, the patient complained of postdural puncture headache resistant to symptomatic treatment. Because there were no data concerning the safety of a blood patch in this condition, a colloid (a modified fluid gelatin heated to 37 degrees C) was injected in the epidural space instead of blood. Headaches decreased immediately after the epidural injection of the colloid and disappeared totally within 12 hr. CONCLUSION: Data concerning the safety of epidural blood patches in patients with sickle cell disease are lacking. Injection of colloids in the epidural space could be an alternative.

Christo, P. J. "Opioid effectiveness and side effects in chronic pain." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 699-713 UI 14719714.

Opioids can provide effective analgesia by way of different routes of administration without limiting side effects for most patients suffering from chronic pain when clinicians properly manage the pertinent patient-, pain-, and drug-centered characteristics. Randomized, placebo-controlled, prospective studies are needed to establish a causal relationship between opioids and hypogonadism. Many of the current studies are retrospective, which only lead to suggestive associations between opioids and hypogonadism and incorporate bias. Clinicians may incorporate available tools, including urine toxicology tests, to assess any aberrant behavior on the part of patients using opioids and to maximize compliance with an opioid regimen. [References: 60]

Clark, W. C., et al. "Factor analysis validates the cluster structure of the dendrogram underlying the Multidimensional Affect and Pain Survey (MAPS) and challenges the a priori classification of the descriptors in the McGill Pain Questionnaire (MPQ)." *Pain.* 106, no. 3(2003): 357-63 UI 14659518.

The purpose of this study was to validate the content and structure of the Multidimensional Affect and Pain Survey (MAPS) by means of factor analysis. The 101-MAPS is based on a dendrogram obtained by cluster analysis and contains 30 clusters subsumed within three superclusters. If the MAPS is a valid questionnaire for the quantification of emotion and pain in patients, then factor analysis of patients' intensity ratings should produce factors which correspond to the cluster structure of the dendrogram. To confirm the structure of the dendrogram and hence, MAPS, factor analysis was applied to the responses by 100 outpatients diagnosed with early stage cancer. Principal components analysis of responses to the MAPS yielded six factors. In accordance with the hypothesis, 13 of the 17 clusters within the MAPS somatosensory pain supercluster loaded on three sensory factors: factor 1, severe sensory pain; factor 3, moderate sensory pain; and factor 6, numb/cold. Five of the eight clusters within the emotional pain supercluster loaded on factor 2, negative emotions. Four of the five clusters in the well-being supercluster loaded on factor 4, good health. Factor 5, manageable illness was loaded on by clusters from the well-being supercluster and the somatosensory pain supercluster. The homogeneity of the six factors found demonstrate the validity of the MAPS and the cluster structure of the dendrogram. MAPS proved sensitive to sex differences; women endorsed the negative emotions factor more strongly than did men. The MAPS factors were much more homogeneous than those reported in the literature for the McGill Pain Questionnaire.

Clunie, G., M. Fischer, and Eanm. "EANM procedure guidelines for radiosynovectomy." *European Journal of Nuclear Medicine & Molecular Imaging.* 30, no. 3(2003): BP12-6 UI 12723558.

Coughlin, A. M. "Pump away angina with EECP." *Nursing.* 34, no. 1(2004): 48-9 UI 14722434.

D'Arcy, Y. "Managing sickle-cell crisis." *Nursing.* 34, no. 1(2004): 24-5 UI 14738061.

de Tommaso, M., et al. "Nociceptive temporalis inhibitory reflexes evoked by CO2-laser stimulation in tension-type headache." *Cephalalgia.* 23, no. 5(2003): 361-6 UI 12780766.

The aim of the study was to evaluate the laser-induced suppression periods of the temporalis muscle in patients with tension-type headache, compared with the pattern of temporalis activity suppression induced by electrical stimulation. Fifteen patients with chronic and 10 with episodic tension-type headaches were selected. Suppression periods were recorded simultaneously from both temporalis muscles using both electrical stimuli and CO2-laser stimuli. A significant reduction in the later electrically induced suppression period was found in both tension-type headache groups. Laser stimulation induced a first suppression period (LSP1) with a latency of about 50 ms in all patients. The features of LSP1 were similar across groups. The LSP1 should correspond to the first suppression period induced by electrical stimulus, which is partly a nociceptive response, whereas the second period seemed negligibly linked with the activation of pain-related afferents, though probably their activation may contribute to increase the reflex duration and to emphasize abnormalities in tension-type headache.

Defrin, R., et al. "Spatial summation of pressure pain: effect of body region." *Pain.* 106, no. 3(2003): 471-80 UI 14659531.

The characteristics of spatial summation of pressure pain are not clear. Pressure pain threshold (PPT) and perceived pressure pain intensity were measured in the hand, painfree back and myofascial trigger points (MTPs) in the back, using three different stimulus areas (0.5, 1 and 2 cm(2)). PPT decreased and perceived pain increased significantly with an increase in stimulation area in all the regions (e.g. PPT in the back, from 406+/-168 to 205+/-102kPa, P<0.0001). The magnitude of spatial summation of pressure pain was not significantly different between the regions. However, PPT in the back was significantly higher compared to the hand and MTPs (e.g. for 2 cm(2): mean of 205+/-102 vs 175+/-75 and 159+/-72kPa, P<0.01, respectively). Irrespective of body region, the quality of pain evoked with the large areas (1 and 2 cm(2)) was of pressure whereas in the small area (0.5 cm(2)) it was perceived as a prick. In conclusion, both PPT and perceived pressure pain intensity are subject to a considerable spatial summation in all the regions tested. The quality of pressure-evoked pain is probably determined by this spatial summation. Body region significantly affects the PPT level for a fixed stimulation area but not the magnitude of its spatial summation for areas up to 2 cm(2), which are probably within the receptive field of single spinal nociceptive neurons.

Docherty, B. "12-lead ECG interpretation and chest pain management: 1." *British Journal of Nursing.* 12, no. 21(2003): 1248-55 UI 14685114.

The National Service Framework for Coronary Heart Disease provides guidance on important aspects of therapy that may make a substantial difference to patient care (Department of Health (DoH), 2001). It highlights the need to identify and fast-track patients with an acute coronary syndrome so that thrombolysis or appropriate interventional care can take place as soon as possible, to optimize myocardial salvage and reduce door-to-needle time (DoH, 2001; Castle, 2002). It is therefore extremely important that nurses in acute clinical areas are able to record and interpret 12-lead electrocardiograms so that the treatment modality can be initiated as soon as possible, leading to better clinical outcomes for this patient group. Although nurses work within a healthcare team, it is often the nurse who initially assesses, implements and coordinates care for patients with chest pain, be it in the emergency department, cardiac unit, general ward setting or general practice. [References: 25]

Doleys, D. M., and B. L. Dinoff. "Psychological aspects of interventional therapy." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 767-83 UI 14719718.

This discussion is not, nor could it hope to be, an exhaustive examination of all of the various interventional therapies. Instead, it is intended to highlight the potential contribution of psychosocial factors. These factors may vary to some degree or another depending on the specific procedure, but clearly play a role whenever the desired outcome involves a reduction in subjective pain, alteration in the adaptiveness with which the patient responds to the experience of pain, and quality of life. Many notables, including Dr. Michael Cousins, have echoed the importance of incorporating interventional therapies into an interdisciplinary approach. Yet, there seems to be a preponderance of "block shops". Even when used for diagnostic or prognostic purposes, the impact of psychosocial variables and the potential relevance of a meaningful behavioral or psychologic evaluation cannot be overstated. It is easy to understand how the reader might conclude that immersing oneself in the minutiae of all these variables could lead to a feeling of intellectual paralysis when it comes to evaluating the data and arriving at a conclusion or diagnosis. However, ignoring these psychosocial variables and their complex interaction does not constitute a solution. This is particularly true in considering discography where, depending on the criteria applied, the percent of "false positives" can vary from 0% to as much as 40%. The implication for the performing of "unnecessary" spine surgery is obvious.

The thoughtful practitioner will be mindful of the role of psychosocial variables in so far as they are thought to be relevant in a particular case. The overall contribution of psychosocial variables to the application of interventional therapies for the diagnosis and treatment of pain can be overlooked and ignored, but not denied. A certain percentage of patients will respond in a predictable, desirable or positive fashion purely on a statistical basis. Historically, and there seems to be no reason to believe this will change in the immediate future, the degree to which the psychosocial variables are considered is left up to the interventionalist. Some are content to perform a directed procedure or therapy concerned only, and sometimes to a less than sufficient degree, with the technical adequacy of the procedure. Others will appreciate the role of human factors including those of the practitioner and patient alike, and strive not only for a statistically derived outcome but the best possible outcome for a given patient. Psychosocial factors can sometimes take on the character of "nuisance variables". However, it is hard not to wonder how much care each would want to have given to these factors if one were on the other end of the needle. [References: 65]

Drewes, A. M., et al. "Multi-modal induction and assessment of allodynia and hyperalgesia in the human oesophagus." *European Journal of Pain: Ejp.* 7, no. 6(2003): 539-49 UI 14575667.

BACKGROUND AND AIMS: Experimental pain models based on single stimuli have to some degree limited visceral pain studies in humans. Hence, the aim of this study was to investigate the effect of multi-modal visceral pain stimuli of the oesophagus in healthy subjects before and after induction of visceral hyperalgesia. We used a multi-modal psychophysical assessment regime and a neurophysiological method (nociceptive reflex) for the characterisation of the experimentally induced hyperalgesia. METHODS: A probe for multi-modal (cold, warm, electrical, and mechanical) visceral stimulation was positioned in the lower part of the oesophagus in eleven healthy subjects. Mechanical stimuli were applied as distensions with a bag, which also had electrodes mounted for electrical stimulation. Thermal stimulation with temperatures from 0 to 60 degrees C was applied with re-circulating water in the bag. To assess the interaction between visceral and somatic pathways, the nociceptive withdrawal reflex to electrical stimuli at the ankle was measured with and without simultaneous mechanical oesophageal distension to painful levels. Finally, the oesophageal sensitisation was induced by perfusion with hydrochloric acid. Multimodal responses (pain threshold, stimulus response function, size of nociceptive reflex, and referred pain areas) were assessed before and after the induced hyperalgesia. RESULTS: The multi-modal psychophysical responses and reflex sizes were assessed twice before sensitisation, and the parameters were reproducible. Sensitisation of the oesophagus resulted in hyperalgesia to electrical and mechanical stimuli (29 and 35% decrease in pain threshold) and allodynia to cold and warmth stimuli (11% increase in sensory rating). After sensitisation, the referred pain area to mechanical stimuli increased more than 300% with a change in the localisation of the referred pain to all stimuli, and the amplitude of nociceptive reflex increased 100%, all indicating the presence of central hyperexcitability. CONCLUSIONS: Visceral hyperalgesia/allodynia can be induced experimentally and assessed quantitatively by the newly introduced multi-modal psychophysical assessment approach. The significant changes of the experimentally evoked referred pain patterns and of the nociceptive reflex evoked from a distant somatic structure indicate that even short-lasting visceral hyperalgesia can generate generalised sensitisation.

Dutta, A., G. D. Puri, and J. Wig. "Piroxicam gel, compared to EMLA cream is associated with less pain after venous cannulation in volunteers." *Canadian Journal of Anaesthesia.* 50, no. 8(2003): 775-8 UI 14525815.

PURPOSE: To evaluate and compare the analgesic efficacy and anti-inflammatory effects of topical piroxicam gel vs eutectic mixture of local anesthetic (EMLA) cream

applied to the peripheral venous cannulation site in adult volunteers. METHODS: Piroxicam gel and EMLA cream were randomly applied on the dorsum of the right and left hand of ten volunteers who acted as their own control. A venous cannula was inserted (no iv infusion) and removed after one hour. Pain scores and signs of inflammation were noted at the cannulation site up to 48 hr. RESULTS: Pain scores with piroxicam gel were higher on cannulation and on advancement of the cannula ($P < 0.05$). Thereafter, pain scores were significantly higher with EMLA ($P < 0.05$). Blanching was present at all the peripheral venous sites treated with EMLA cream. Signs of inflammation (erythema, edema) were not more frequent with EMLA than with piroxicam ($P > 0.05$). Induration was more frequent with EMLA at six hours. CONCLUSION: In volunteers EMLA cream is associated with less pain on cannulation and cannula advancement compared to piroxicam gel. Topical application of piroxicam gel before peripheral venous cannulation alleviates pain and, possibly, inflammation in the period subsequent to cannulation itself.

Edwards, R. R., et al. "Pain tolerance as a predictor of outcome following multidisciplinary treatment for chronic pain: differential effects as a function of sex." *Pain.* 106, no. 3(2003): 419-26 UI 14659525.

Sex-related differences in the experience of clinical and experimental pain have been widely reported. Females are at elevated risk for developing several chronic pain conditions and women demonstrate greater sensitivity to noxious stimulation in the laboratory. However, relationships between responses to experimental noxious stimuli and the experience of clinical pain have not been well characterized. One previous study of healthy adults indicated that pain threshold and tolerance were associated with clinical pain among women but not men (i.e. females with lower pain threshold and tolerance reported more clinical pain). In the present investigation, relationships between pain tolerance and outcomes of treatment for chronic pain were evaluated in a sex-dependent manner. Ischemic pain tolerance was assessed prior to treatment in 171 chronic pain patients completing a pain management program. Outcomes were measured as changes in pain severity, affect, and pain-related disability. Over the course of treatment, women demonstrated greater improvement in pain-related disability while men showed more reduction in pain. Ischemic pain tolerance was related to outcome in a sex-specific fashion. Women with higher pain tolerances showed greater improvement in pain, more reduction in pain-related interference, and more increases in activity level than women with lower pain tolerances. In contrast, pain tolerance was not associated with positive treatment outcomes among men. These results indicate that experimental pain responses may be most clinically relevant for women, and that sex differences may exist in the determinants of pain-treatment outcomes.

Edwards, R. R., et al. "Individual differences in diffuse noxious inhibitory controls (DNIC): association with clinical variables." *Pain.* 106, no. 3(2003): 427-37 UI 14659526.

Laboratory pain research has been criticized as being irrelevant to the clinical experience of pain. Previous findings have been inconsistent with some studies suggesting that experimental pain responses may be related to the reported presence or severity of chronic pain, while others report no such associations. However, few of these studies assess a variety of laboratory pain responses, and none has assessed relationships between clinical pain and diffuse noxious inhibitory controls (DNIC) in healthy subjects. We administered questionnaire measures of pain, quality of life, and psychological variables to a sample of healthy adults participating in a laboratory study of age differences in pain responses. DNIC was not related to other laboratory pain responses, psychological variables, or physiological variables measured in the present study. Regression models predicting health-related quality of life (e.g. pain, physical functioning) revealed that age, sex, and DNIC responses explained between 10 and 25% of the variance in these dependent

measures. Of the laboratory pain variables, only DNIC was the sole consistent predictor of clinical pain and physical health, with greater DNIC responses related to less pain, better physical functioning, and better self-rated health. In addition, age differences in DNIC appeared to partially mediate age differences in physical functioning. These findings highlight the potential clinical relevance of experimental pain procedures and suggest that DNIC may be the laboratory pain response most closely associated with clinical pain and health-related variables.

Eisenberg, E., et al. "Lamotrigine for intractable sciatica: correlation between dose, plasma concentration and analgesia." *European Journal of Pain: Ejp.* 7, no. 6(2003): 485-91 UI 14575661.

An open trial was conducted to study the potential efficacy of the antiepileptic agent lamotrigine in relieving the sciatic pain and the relationship between lamotrigine dosage, plasma concentration and the clinical response. Subsequent to a 1 week washout period from previous analgesics, lamotrigine dose was titrated on a weekly basis from 25 to 400mg/day and was maintained at that dose for additional 4 weeks. Spontaneous pain, the Short Form McGill Pain Questionnaire (SFMPQ), the Straight Leg Raise (SLR) test, and range of motion of the lumbar spine (leaning foreword, to the affected side) were used to assess lamotrigine efficacy. Lamotrigine plasma concentration was tested at the end of each week during the titration period and at the end of the study. Fourteen patients were enrolled in the study. All outcome measurers improved compared to baseline during the titration period, but reached a statistically significant level of improvement only at the 400mg dose. A linear correlation was found between mean lamotrigine dose, mean plasma concentration and mean weekly spontaneous pain, mean SLR and mean bending the affected side, but not with the SFMPQ score. Study results suggest lamotrigine is a potentially effective and safe compound for the treatment of painful lumbar radiculopathy, and that it is likely to act in a dose- and plasma concentration-dependent fashion.

Eisenberg, M. J., A. Brox, and A. N. Bestawros. "Calcium channel blockers: an update." *American Journal of Medicine.* 116, no. 1(2004): 35-43 UI 14706664.

This paper reviews the current literature pertaining to calcium channel blockers, including their classification, properties, and therapeutic indications, in light of several recent trials that have addressed their safety. Calcium channel blockers are a structurally and functionally heterogeneous group of medications that are used widely to control blood pressure and manage symptoms of angina. They are classified as dihydropyridines or nondihydropyridines. As a class, they are well tolerated and are associated with few side effects. The question of whether they may precipitate cardiovascular events has been largely settled by recent trials, such as the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT), the International Verapamil Slow-Release/Trandolapril Study (INVEST), and the Controlled Onset Verapamil Investigation of Cardiovascular Endpoints (CONVINCE) study, in which no such association was found. Even so, the use of these agents has been linked with an increased risk of heart failure. Thus, long-acting calcium channel blockers may be safely used in the management of hypertension and angina. However, as a class, they are not as protective as other antihypertensive agents against heart failure. [References: 74]

Erdek, M. A., and P. S. Staats. "Spinal cord stimulation for angina pectoris and peripheral vascular disease." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 797-804 UI 14719720.

SCS is a viable option for treating angina pectoris and inoperable PVD. Its mechanism of action remains controversial, but successful pain relief has been consistently reported in various studies. Many clinicians are foregoing a formal trial, choosing instead to obtain an adequate area of paresthesia and implant in one

session. Long-term follow-up of SCS patients treated for angina pectoris shows continued pain relief, increase in activities, and decreased use of medications. Emerging literature supports the finding that SCS is cost-effective in this patient population relative to CABG. SCS does not mask the ischemic pain that signals impending further damage of the myocardium. In patients with inoperable PVD, SCS relieves pain and improves microcirculatory blood flow. Quality of life and mobility can be improved with SCS. The beneficial effects of SCS on ulcer healing are controversial, and evidence suggests that the best candidates for the procedure are those with ischemic rest pain without tissue loss. Patients with diabetes mellitus and hypertension may have the least favorable outcomes with regard to limb salvage. No convincing data have been published on the cost-effectiveness of SCS in this patient population. SCS is a safe procedure that is minimally invasive, reversible, and associated with only infrequent side effects, the most common of which include lead migration and infection. SCS is clearly an option for the improvement of pain and the quality of life in this carefully selected subset of patients. [References: 16]

Fasting, S., and S. E. Gisvold. "Statistical process control methods allow the analysis and improvement of anesthesia care." *Canadian Journal of Anaesthesia.* 50, no. 8(2003): 767-74 UI 14525814.

PURPOSE: Quality aspects of the anesthetic process are reflected in the rate of intraoperative adverse events. The purpose of this report is to illustrate how the quality of the anesthesia process can be analyzed using statistical process control methods, and exemplify how this analysis can be used for quality improvement. METHODS: We prospectively recorded anesthesia-related data from all anesthetics for five years. The data included intraoperative adverse events, which were graded into four levels, according to severity. We selected four adverse events, representing important quality and safety aspects, for statistical process control analysis. These were: inadequate regional anesthesia, difficult emergence from general anesthesia, intubation difficulties and drug errors. We analyzed the underlying process using 'p-charts' for statistical process control. RESULTS: In 65,170 anesthetics we recorded adverse events in 18.3%; mostly of lesser severity. Control charts were used to define statistically the predictable normal variation in problem rate, and then used as a basis for analysis of the selected problems with the following results: Inadequate plexus anesthesia: stable process, but unacceptably high failure rate; Difficult emergence: unstable process, because of quality improvement efforts; Intubation difficulties: stable process, rate acceptable; Medication errors: methodology not suited because of low rate of errors. CONCLUSION: By applying statistical process control methods to the analysis of adverse events, we have exemplified how this allows us to determine if a process is stable, whether an intervention is required, and if quality improvement efforts have the desired effect.

Feler, C. A., L. A. Whitworth, and J. Fernandez. "Sacral neuromodulation for chronic pain conditions." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 785-95 UI 14719719.

Some of the pelvic pain syndromes seem to have features of neurogenic inflammation and neuropathic pain in common. As opposed to being separate disease entities, they may represent a spectrum of clinical presentations of CRPS I of the pelvis. Sacral nerve root stimulation provides good symptomatic relief of pain and voiding dysfunction. The techniques of retrograde root stimulation may offer superior results with fewer complications and lead migrations when compared with other methods. Perhaps neuromodulation should be used earlier in the treatment paradigm for these disorders, before the potentially injurious procedures of hydrodistention, bladder installations, and cystectomies.

Ferch, R. D., et al. "Anterior correction of cervical kyphotic deformity: effects on myelopathy, neck pain, and sagittal alignment." *Journal of Neurosurgery.* 100, no. 1 Suppl(2004): 13-9 UI 14748568.

OBJECT: Cervical myelopathy may develop as a result of spinal cord compression with or without deformity. The effect of persistent kyphotic deformity on the ability of the cervical cord to recover following decompressive surgery is not known. METHODS: Between 1997 and 2000, a total of 28 patients with progressive myelopathy and kyphotic deformity underwent anterior decompression, deformity correction (0-4 degrees of lordosis), and fusion with anterior plating. Patients received clinical and radiological follow-up care, with independent analysis. Variables assessed included patient characteristics, severity of preoperative myelopathy, neck pain, and cervical sagittal alignment. Twenty-six patients (93%) underwent follow-up review for a minimum of 18 months. Two patients died: one died in the perioperative period and was excluded from further analysis, and in the other only 3 months of follow-up data could be obtained. Local deformity was corrected to neutral or lordosis in 24 cases (89%), and the overall cervical curve was corrected to neutral or lordosis in 20 cases (74%). There was a significant improvement in myelopathy scores in those patients in whom the target (0 to 4 degrees of lordosis) local angle was achieved ($p = 0.04$). There was a variable change in overall cervical sagittal alignment following local correction. Improvement in myelopathy was unrelated to patient age, previous surgery, or number of segments fused. Improvement in pain score was not related to correction of kyphotic angle. CONCLUSIONS: The correction of sagittal alignment may promote recovery in spinal cord function in patients with kyphotic deformity.

Finneran, M. T., et al. "Large-array surface electromyography in low back pain: a pilot study." *Spine.* 28, no. 13(2003): 1447-54 UI 12838104.

STUDY DESIGN: A large-array surface electromyography device was used to collect data from healthy pain-free persons and from those with acute or chronic low back pain. Images of regional muscle electromyographic activity were assessed visually, and maximum root mean square values were compared statistically. OBJECTIVE: To determine whether data differs by patient type. SUMMARY OF BACKGROUND DATA: Whereas there is a good understanding of the anatomy and psychosocial aspects of low back pain, there is a need to understand better the physiology of low back pain. METHODS: Large-array surface electromyography data were collected from the low back muscles of 201 participants over a 3-month period using a 63-electrode fixed array and a standardized protocol. Color images representing the voltage root mean square difference of each electrode pair were created. Three images from each of three positions (standing upright, standing in 20 degrees of trunk flexion, standing holding weights) were collected from each participant. Serial studies were performed on the acute population over a 6-week follow-up period. RESULTS: Images of regional muscle activity from 92.7% of normal controls ($n = 163$) showed symmetrical activity. Patients with acute ($n = 13$) or chronic ($n = 25$) low back pain had multifocal and/or asymmetrical patterns. Symmetrical patterns returned in the three patients whose acute pain resolved during the study. Maximum root mean square values were higher among patients with acute ($P = 0.03$) and chronic ($P = 0.04$) pain than among control subjects. CONCLUSIONS: Large-array surface electromyography produced data from patients with back pain that differed from data on subjects without back pain. This method may be useful in evaluating patients with low back pain.

Fisher, C. G., et al. "Prospective randomized clinical trial comparing patient-controlled intravenous analgesia with patient-controlled epidural analgesia after lumbar spinal fusion." *Spine.* 28, no. 8(2003): 739-43 UI 12698113.

STUDY DESIGN: A prospective, randomized, double-blind clinical trial was conducted. OBJECTIVE: To compare the efficacy of patient-controlled analgesia

(PCA) with that of patient-controlled epidural analgesia (PCEA) in terms of overall patient satisfaction with postoperative pain management after lumbar spine fusion. SUMMARY OF BACKGROUND DATA: In numerous surgical disciplines, PCEA and PCA have proved to be effective methods of postoperative pain control. The literature states that with PCEA, less opioid use is required during the immediate postoperative period to maintain equivalent pain control compared to PCA. Continuous epidural infusion has been assessed in spine fusion patients, but PCEA has not been evaluated. Furthermore, this is the first prospective randomized clinical trial to assess overall patient satisfaction while stratifying patients for both anxiety level and preoperative opioid use. METHODS: For this study, 74 patients were assigned randomly to one of two treatment groups, with PCA and PCEA administered in a double-blind manner for a 3-day postoperative course. All the patients received both PCA and PCEA delivery systems. Assessment was by a blinded, independent observer. Overall patient satisfaction with pain management was assessed by a visual analog scale at the end of postoperative day 3. Secondary measures included: three scales from the Functional Independence Measure instrument; opioid quantity; side effects; and length of hospital stay. RESULTS: Thirty-eight patients were randomized to PCA, and 36 were randomized to PCEA. No baseline variable differences between the groups were observed. The results showed no difference between the groups on the following measures: overall patient satisfaction with pain management, ambulation, and length of stay. The PCA patients used significantly more opioid than the PCEA patients. CONCLUSIONS: Both postoperative analgesic regimens provided good overall patient satisfaction. The only clinical advantage of PCEA over PCA for spine fusion patients was the lower amount of opioid consumed, although the PCEA group experienced significantly more side effects than the PCA group. There were no other significant differences. Therefore, patient or physician preference could select either postoperative pain management delivery system.

Fitzgibbon, D., et al. "Initial pharmacokinetic, safety and efficacy evaluation of nasal morphine gluconate for breakthrough pain in cancer patients." *Pain.* 106, no. 3(2003): 309-15 UI 14659513.

Patients with controlled background pain associated with cancer frequently also experience episodes of moderate to severe intensity breakthrough pain. Opioid pharmacotherapy, particularly with oral morphine, remains the cornerstone for the management of cancer pain. Nasal administration of opioids provides a mechanism for more rapid drug absorption and more rapid onset of pain relief compared with oral dosing. This non-randomized, open-label, uncontrolled investigation evaluated the pharmacokinetics, safety and efficacy of a single 40 mg dose of nasal morphine gluconate, administered to cancer patients in response to an episode of breakthrough pain. Single dose nasal morphine gluconate administered to 11 patients was associated with effective plasma morphine concentrations (mean C(max) 64 ng/ml; range 33.8-121 ng/ml) and low plasma morphine metabolites (morphine-6-glucuronide mean C(max) 114 ng/ml; range 46-189 ng/ml; morphine-3-glucuronide mean C(max) 572 ng/ml; range 257-990 ng/ml). Side effects were minor and limited to nasal irritation. Patients reported rapid onset of pain relief (perceptible pain relief achieved in 10/11 patients, time to onset 2.4+/-2.1 min; and meaningful pain relief, achieved in five patients, 6.8+/-7.3 min to onset, mean t(max) 0.36 h). Pain intensity scores were significantly reduced at all times after dosing; pain relief scores were unchanged. Patient satisfaction ratings were high. These results show that nasal morphine has rapid absorption and apparent onset of effect. Additional multi-dose, dose-ranging and placebo-controlled studies of nasal morphine for cancer pain are warranted.

Fitzgibbon, D. R., et al. "Chronic pain management: American Society of Anesthesiologists Closed Claims Project." *Anesthesiology.* 100, no. 1(2004): 98-105 UI 14695730.

BACKGROUND: The practice of chronic pain management has grown steadily in recent years. The purpose of this study was to identify and describe issues and trends in liability related to chronic pain management by anesthesiologists. METHODS: Data from 5,475 claims in the American Society of Anesthesiologists Closed Claims Project database between 1970 and 1999 were reviewed to compare liability related to chronic pain management with that related to surgical and obstetric (surgical/obstetric) anesthesia. Acute pain management claims were excluded from analysis. Outcomes and liability characteristics between 284 pain management claims and 5,125 surgical/obstetric claims were compared. RESULTS: Claims related to chronic pain management increased over time ($P < 0.01$) and accounted for 10% of all claims in the 1990s. Compensatory payment amounts were lower in chronic pain management claims than in surgical/obstetric anesthesia claims from 1970 to 1989 ($P < 0.05$), but during the 1990s, there was no difference in size of payments. Nerve injury and pneumothorax were the most common outcomes in invasive pain management claims. Epidural steroid injections accounted for 40% of all chronic pain management claims. Serious injuries, involving brain damage or death, occurred with epidural steroid injections with local anesthetics and/or opioids and with maintenance of implantable devices. CONCLUSIONS: Frequency and payments of claims associated with chronic pain management by anesthesiologists increased in the 1990s. Brain damage and death were associated with epidural steroid injection only when opioids or local anesthetics were included. Anesthesiologists involved in home care of patients with implanted devices such as morphine pumps and epidural injections or patient-controlled analgesia should be aware of potential complications that may have severe outcomes.

Fleming, T., et al. "Report from the 100th Cardiovascular and Renal Drugs Advisory Committee meeting: US Food and Drug Administration: December 8-9, 2003 Gaithersburg, MD." *Circulation.* 109, no. 2(2004): e9004-5 UI 14734515.

Francesca, F., et al. "EAU guidelines on pain management." *European Urology.* 44, no. 4(2003): 383-9 UI 14499670.

Pain is the most common symptom of any illness; the physician's therapeutic task is twofold: to discover and treat the cause of pain and the pain itself, whether or not the underlying cause is treatable, to provide relief and reduce the suffering caused by pain. Although we use the term of pain to define all sensations that hurt or are unpleasant, actually two quite different kinds of pain exist. The first (nociceptive) is associated with tissue damage or inflammation, the second (neuropathic) results from a lesion to the peripheral or central nervous systems. Pain can also be divided in acute and chronic. Caregivers are to face pain in two main settings: after surgery and in cancer patients. These tasks require a multidisciplinary team, able to properly assess and treat pain. Postoperative pain is to be treated early and aggressively. Several drug options are available, to be tailored on the surgical procedure and the patient. Pain in cancer patients consists of different aspects: it can be caused by the cancer itself or may be secondary to muscular spasm or cancer treatments. The management involves mainly pharmacotherapy, but also primary treatments as surgery, radiochemotherapy or even antibiotics can provide an adequate relief.Analgesics are to be employed according to an ascending scale, but other options can be combined to improve the outcome when a satisfactory balance between relief and side effects is not achieved; they include invasive techniques, physical and psychological therapy.The mainstay of pain management entails a interdisciplinary cooperation; it requires a full knowledge of the methods of evaluation and treatment of this condition.

Fritz, J. M., A. Delitto, and R. E. Erhard. "Comparison of classification-based physical therapy with therapy based on clinical practice guidelines for patients with acute low

back pain: a randomized clinical trial." *Spine.* 28, no. 13(2003): 1363-71; discussion 1372 UI 12838091.

STUDY DESIGN: A randomized clinical trial was conducted. OBJECTIVE: To compare the effectiveness of classification-based physical therapy with that of therapy based on clinical practice guidelines for patients with acute, work-related low back pain. SUMMARY OF BACKGROUND DATA: Clinical practice guidelines recommend minimal intervention during the first few weeks after acute low back injury. However, studies supporting this recommendation have not attempted to identify which patients are likely to respond to particular interventions. METHODS: For this study, 78 subjects with work-related low back pain of less than 3 weeks duration were randomized to receive therapy based on a classification system that attempts to match patients to specific interventions or therapy based on the Agency for Health Care Policy and Research guidelines. The subjects were followed for 1 year. Outcomes included the impairment index, Oswestry scale, SF-36 component scores, satisfaction, medical costs, and return to work status. RESULTS: After adjustment for baseline factors, subjects receiving classification-based therapy showed greater change on the Oswestry (P = 0.023) and the SF-36 physical component (P = 0.029) after 4 weeks. Patient satisfaction was greater (P = 0.006) and return to full-duty work status more likely (P = 0.017) after 4 weeks in the classification-based group. After 1 year, there was a trend toward reduced Oswestry scores in the classification-based group (P = 0.063). Median total medical costs for 1 year after injury were 1003.68 dollars for the guideline-based group and 774.00 dollars for the classification-based group (P = 0.13). CONCLUSIONS: For patients with acute, work-related low back pain, the use of a classification-based approach resulted in improved disability and return to work status after 4 weeks, as compared with therapy based on clinical practice guidelines. Further research is needed on the optimal timing and methods of intervention for patients with acute low back pain.

Fritz, J. M., and S. R. Piva. "Physical impairment index: reliability, validity, and responsiveness in patients with acute low back pain." *Spine.* 28, no. 11(2003): 1189-94 UI 12782991.

STUDY DESIGN: Cohort study of patients with acute low back pain undergoing physical therapy. OBJECTIVES: Examine the reliability and validity of the Physical Impairment Index in a group of patients with acute low back pain and determine the responsiveness and minimum detectable change of the index and its component tests. SUMMARY OF THE BACKGROUND DATA: The Physical Impairment Index was originally described as a reliable and valid means of assessing physical impairment in patients with low back pain. The psychometric properties of the index have not been reported in patients with acute low back pain, nor has its responsiveness been examined. METHODS: Seventy-eight patients with acute (<3 weeks duration) low back pain participating in a clinical trial were assessed at baseline and after 4 weeks. Interrater reliability of the index was examined in a subgroup of 20 patients. Validity was examined through correlations with concurrent measures of pain, disability, and psychosocial variables. Changes in the index over 4 weeks were used to assess responsiveness and minimum detectable change. RESULTS: Interrater reliability of the index was high (intraclass correlation coefficient = 0.89), and its validity was generally supported by the pattern of correlations. The index was more responsive to change than any of its component tests but was less responsive than the Oswestry disability score. The minimum detectable change on the index was approximately 1 point. CONCLUSIONS: The Physical Impairment Index appears to be a reliable and valid measure of physical impairment for patients with acute low back pain and may be useful as an adjunct outcome measure for studies involving these patients. Further research on patients with chronic pain is needed before it can be advocated for outcomes research with this population.

Gagnon, B., A. Almahrezi, and G. Schreier. "Methadone in the treatment of neuropathic pain.[see comment]." *Pain Research & Management.* 8, no. 3(2003): 149-54 UI 14657982.

BACKGROUND: Methadone, being an N-Methyl-D-Aspartate receptor antagonist, may have a potential role in the treatment of neuropathic pain. OBJECTIVES: To evaluate the effect of methadone in the treatment of neuropathic pain and to estimate the possible dose ranges needed for pain control. METHODS: Methadone was offered as a treatment option to consecutive cancer and noncancer patients with neuropathic pain. Pain intensity was measured by the visual analogue scale (VAS) (0-10 cm where 0 = no pain and 10 = worst possible pain). Mechanical allodynia and paroxysmal (shooting) pain were assessed clinically. All assessments were collected prospectively before treatment and once a stable dose of methadone was reached. RESULTS: A total number of 18 patients met our inclusion criteria. The mean pretreatment VAS +/- SD was 7.7+/-1.5 cm and this dropped significantly to 1.4+/-1.7 cm on a stable dose of methadone (P<0.0001). Nine of 13 patients (70 %) had a complete resolution of mechanical allodynia and all eight patients (100%) with shooting pain reported a complete response. The median stable dose of methadone was 15 mg per day. CONCLUSION: Methadone at relatively low doses seems to be useful in the treatment of neuropathic pain.

Given, C., et al. "Effect of a cognitive behavioral intervention on reducing symptom severity during chemotherapy." *Journal of Clinical Oncology.* 22, no. 3(2004): 507-16 UI 14752074.

PURPOSE: To describe a randomized trial of a cognitive behavioral intervention on reducing symptom severity among patients diagnosed with solid tumors and undergoing a first course of chemotherapy and to determine whether the intervention had an additive or interactive effect on symptom severity in the presence of supportive care medications. PATIENTS AND METHODS: Patients (N = 237) were accrued from comprehensive and community cancer centers, interviewed, and randomly assigned to either the experimental intervention (n = 118) or conventional care (n = 119). A symptom severity index, based on summed severity scores across 15 symptoms, was the primary outcome. Each patient's site of cancer, stage at diagnosis, chemotherapy protocols, and use of supportive medications were learned from medical records. RESULTS: Groups were equivalent at baseline, and attrition by characteristics by group was not different. The proportion of patients not receiving chemotherapy at 10 and 20 weeks did not differ by group. At the 10- and 20-week observations, there was a significant interaction between the experimental group and baseline symptom severity. Patients in the experimental group who entered the trial with higher symptom severity reported significantly lower severity at 10 and 20 weeks. Controlling for chemotherapy treatment status at follow-up and supportive care medications did not alter the effect of the experimental intervention. CONCLUSION: Compared with conventional care alone, the experimental intervention was effective among patients who entered the trial with higher levels of symptom severity. Age, sex, site or stage of cancer, and supportive medications did not modify the effect of this cognitive behavioral intervention on symptom severity.

Glenn, B., and J. W. Burns. "Pain self-management in the process and outcome of multidisciplinary treatment of chronic pain: evaluation of a stage of change model." *Journal of Behavioral Medicine.* 26, no. 5(2003): 417-33 UI 14593851.

For chronic pain patients, acceptance of a self-management approach for pain may influence success in treatment, and adopting such a perspective may be conceptualized as a stage of change model. For 65 chronic pain patients in multidisciplinary treatment programs, we examined whether pretreatment self-management stage, assessed with Pain Stage of Change Questionnaire subscales, affected improvements in outcomes, and whether changes in stage represented a therapeutic process factor. Results showed (a) low precontemplation, high

contemplation, and high action attitudes at pretreatment predicted greater improvements in outcomes than the opposite pattern of attitudes; (b) pre- to midtreatment changes in precontemplation and contemplation attitudes predicted mid- to posttreatment changes in pain severity and interference, but not vice versa. Results support the usefulness of a stage model in conceptualizing patients' acquisition of a self-management approach to pain, and suggest that early-treatment progression across stages may lead to reductions in pain severity and lifestyle interference.

Goetz, M. P., et al. "Percutaneous image-guided radiofrequency ablation of painful metastases involving bone: a multicenter study." *Journal of Clinical Oncology.* 22, no. 2(2004): 300-6 UI 14722039.

PURPOSE: Few options are available for pain relief in patients with bone metastases who fail standard treatments. We sought to determine the benefit of radiofrequency ablation (RFA) in providing pain relief for patients with refractory pain secondary to metastases involving bone. PATIENTS AND METHODS: Thirty-one US and 12 European patients with painful osteolytic metastases involving bone were treated with image-guided RFA using a multitip needle. Treated patients had > or = 4/10 pain and had either failed or were poor candidates for standard treatments such as radiation or opioid analgesics. Using the Brief Pain Inventory-Short Form, worst pain intensity was the primary end point, with a 2-unit drop considered clinically significant. RESULTS: Forty-three patients were treated (median follow-up, 16 weeks). Before RFA, the mean score for worst pain was 7.9 (range, 4/10 to 10/10). Four, 12, and 24 weeks following treatment, worst pain decreased to 4.5 (P <.0001), 3.0 (P <.0001), and 1.4 (P =.0005), respectively. Ninety-five percent (41 of 43 patients) experienced a decrease in pain that was considered clinically significant. Opioid usage significantly decreased at weeks 8 and 12. Adverse events were seen in 3 patients and included (1) a second-degree skin burn at the grounding pad site, (2) transient bowel and bladder incontinence following treatment of a metastasis involving the sacrum, and (3) a fracture of the acetabulum following RFA of an acetabular lesion. CONCLUSION: RFA of painful osteolytic metastases provides significant pain relief for cancer patients who have failed standard treatments.

Goldstein, D. J., et al. "Effects of duloxetine on painful physical symptoms associated with depression." *Psychosomatics.* 45, no. 1(2004): 17-28 UI 14709757.

Painful physical symptoms are common features of major depressive disorder and may be the presenting complaints in primary care settings. The effect of the dual serotonin (5-HT) and norepinephrine reuptake inhibitor duloxetine on emotional and painful physical symptoms in outpatients with major depressive disorder was evaluated in three randomized, double-blind, placebo-controlled trials. The trials' primary objective was to evaluate the effect of duloxetine on mood, and subjects were not enrolled on the basis of presence, type, or severity of pain. However, the pain-relieving effects of duloxetine were evaluated by a priori defined analyses of results from a visual analogue scale and the Somatic Symptom Inventory. Compared with placebo, duloxetine was associated with significant reduction in pain severity. The authors concluded that duloxetine reduces the painful physical symptoms of depression.

Goodacre, S., et al. "Randomised controlled trial and economic evaluation of a chest pain observation unit compared with routine care." *Bmj.* 328, no. 7434(2004): 254 UI 14724129.

OBJECTIVES: To measure the effectiveness and cost effectiveness of providing care in a chest pain observation unit compared with routine care for patients with acute, undifferentiated chest pain. DESIGN: Cluster randomised controlled trial, with 442 days randomised to the chest pain observation unit or routine care, and cost effectiveness analysis from a health service costing perspective. SETTING: The

emergency department at the Northern General Hospital, Sheffield, United Kingdom. PARTICIPANTS: 972 patients with acute, undifferentiated chest pain (479 attending on days when care was delivered in the chest pain observation unit, 493 on days of routine care) followed up until six months after initial attendance. MAIN OUTCOME MEASURES: The proportion of participants admitted to hospital, the proportion with acute coronary syndrome sent home inappropriately, major adverse cardiac events over six months, health utility, hospital reattendance and readmission, and costs per patient to the health service. RESULTS: Use of a chest pain observation unit reduced the proportion of patients admitted from 54% to 37% (difference 17%, odds ratio 0.50, 95% confidence interval 0.39 to 0.65, P < 0.001) and the proportion discharged with acute coronary syndrome from 14% to 6% (8%, -7% to 23%, P = 0.264). Rates of cardiac event were unchanged. Care in the chest pain observation unit was associated with improved health utility during follow up (0.0137 quality adjusted life years gained, 95% confidence interval 0.0030 to 0.0254, P = 0.022) and a saving of pound 78 per patient (- pound 56 to pound 210, P = 0.252). CONCLUSIONS: Care in a chest pain observation unit can improve outcomes and may reduce costs to the health service. It seems to be more effective and more cost effective than routine care.

Goodacre, S. W., et al. "Clinical predictors of acute coronary syndromes in patients with undifferentiated chest pain." *Qjm.* 96, no. 12(2003): 893-8 UI 14631055.

BACKGROUND: Patients with acute, undifferentiated chest pain present a frequent diagnostic challenge to clinicians. Clinical features are often used to determine which patients may have acute coronary syndrome (ACS). AIM: To identify clinical features that independently predict ACS in patients with acute, undifferentiated chest pain. DESIGN: Prospective study of patients enrolled in a randomized controlled trial. METHODS: The presenting characteristics of participants in the ESCAPE randomized trial of chest pain unit vs. routine care were recorded in a standardized manner. Follow-up consisted of troponin T measurement at 2 days, postal questionnaire at 1 month, and telephone contact at 6 months. ACS was defined as elevated troponin T at 2 days or major adverse cardiac event within 30 days of presentation. Multivariate analysis identified independent clinical predictors of ACS. RESULTS: ACS was diagnosed in 77 (7.9%) of the 972 patients recruited. The following characteristics were independent predictors of ACS (odds ratio, p): age (1.09, p < 0.001), male gender (8.6, p < 0.001), indigestion or burning-type pain (3.0, p = 0.034), pain radiating to the left (2.4, p = 0.013) or right (5.7, p < 0.001) arm, vomiting (3.5, p = 0.007), and previous (5.1, p < 0.001) or current (3.7, p < 0.001) smoking. DISCUSSION: In addition to previously recognized predictors of ACS, it appears that indigestion or burning type pain predicts ACS in patients attending the emergency department with acute, undifferentiated chest pain. Diagnosis of acute 'gastro-oesophageal' chest pain should be avoided in this setting.

Gottlieb, P. D. "Successful treatment of post traumatic stress disorder and chronic pain with paraspinal square wave stimulation." *Alternative Therapies in Health & Medicine.* 10, no. 1(2004): 96, 92-4 UI 14727505.

OBJECTIVE: To determine if Paraspinal Square Wave Stimulation (PSWS) is effective in treating Post Traumatic Stress Disorder (PTSD) and or Chronic Pain. METHOD: PSWS is applied to the paraspinal area from the craniocervical junction to the lower sacrum. RESULTS: Patient achieved dramatic relief from PTSD, unequaled by any previous pharmacologic or psychotherapies. The chronic pain is almost completely disappeared, unlike any previous therapies. CONCLUSION: PSWS is the treatment of choice for this patient with PTSD and Chronic Pain. This patient appears to have completely recovered from PTSD, unlike any other study reported so far.

Govindarajan, R., et al. "Posterior tibial nerve block in the therapeutic management of painful calcaneal spur (plantar fasciitis): a preliminary experience." *Canadian Journal of Anaesthesia.* 50, no. 8(2003): 862-3 UI 14525843.

Gruber, E. M., and E. M. Tschernko. "Anaesthesia and postoperative analgesia in older patients with chronic obstructive pulmonary disease: special considerations." *Drugs & Aging.* 20, no. 5(2003): 347-60 UI 12696995.

Chronic obstructive pulmonary disease (COPD) and older age are known to be independent risk factors for severe perioperative adverse outcomes after surgery. A basic understanding of the disease, careful preoperative evaluation and preparation of the patient, as well as a tailored anaesthetic management plan might help to decrease complications in this patient population. Aging affects the pharmacokinetics and pharmacodynamics of almost all drugs and therefore the dosage must be adapted in older patients. The type of anaesthesia (general versus regional anaesthesia) has no substantial effect on perioperative morbidity and mortality. Most patients, even with severe COPD, tolerate general anaesthesia without major problems. One important goal of the anaesthetic management is to prevent reflex-induced bronchoconstriction, which can be accomplished by the use of volatile anaesthetics. Early recovery can be facilitated by the use of short-acting drugs, such as propofol and the new opioid remifentanil. Judicious use of neuromuscular blocking agents is necessary because of the risk of residual paralysis, and those agents associated with histamine liberation should be avoided. Ventilation requires long expiration times to avoid air trapping, and hyperinflation to avoid the possible threat of pneumothorax and a decrease in cardiac output. For postoperative analgesia, a balanced regimen consisting of regional analgesia with local anaesthetics and NSAIDs should be preferred. This will enhance analgesia and reduce opioid toxicity, which is important in patients with COPD, where respiratory depression is especially dangerous. [References: 95]

Haas, M., et al. "Efficacy of cervical endplay assessment as an indicator for spinal manipulation." *Spine.* 28, no. 11(2003): 1091-6; discussion 1096 UI 12782973.

STUDY DESIGN: Double-blind, randomized, placebo-controlled trial. OBJECTIVES: To evaluate the effect of manual endplay assessment on neck pain and stiffness outcomes in neck pain patients receiving spinal manipulation. SUMMARY OF THE BACKGROUND DATA: There have been no studies on the efficacy of palpation used as an indicator for manipulation in the management of back and neck pain. METHODS: Neck pain patients (n = 104) were randomly assigned to two groups. The study group received manipulation targeted to individual cervical vertebrae according to endplay restriction noted by the examining clinician. The control group received manipulation determined by sham, computer-generated examination findings; endplay examination was ignored and served as a placebo assessment. Treatment was rendered on a single occasion by a chiropractor. Outcomes were neck pain and stiffness assessed before and after manipulation and at least 5 hours following treatment. RESULTS: The study and control groups showed clinically important improvement in neck pain and stiffness. However, there were no clinically important or statistically significant differences between the study and control groups in terms of pain or stiffness outcomes. Findings were robust across patient, complaint, and treatment characteristics. CONCLUSIONS: Endplay assessment in and of itself did not contribute to the same-day pain and stiffness relief observed in neck pain patients receiving spinal manipulation. The impact on a longer course of treatment remains to be investigated. The data suggest that pain modulation may not be limited to mechanisms associated with manipulation of putative motion restrictions.

Haller, H., et al. "Treatment of chronic neuropathic pain after traumatic central cervical cord lesion with gabapentin." *Journal of Neural Transmission.* 110, no. 9(2003): 977-81 UI 12928835.

Central cord syndrome may be associated with severe pain, resistant to conventional pain therapy regimens. Chronic pain may be a persistent problem in rehabilitation of spinal cord injuries. These pain syndromes are long lasting and challenging to treat. Gabapentin has been shown to be useful in treatment of different conditions which may be caused by increased neuronal excitability. This report describes a case where central cord syndrome and its chronic neuropathic pain associated with allodynia was successfully treated with gabapentin.

Harman-Boehm, I. "The patient with unstable angina: no evidence of MI." *Acta Diabetologica.* 40, no. Suppl 2(2003): S407-8 UI 14704877.

A 53-year-old type 2 diabetic woman with macrovascular complications as well as the components of the metabolic syndrome presents with an unstable angina and ST depression on electromiogram. The negative impact of female gender, microvascular complications, and metabolic parameters on cardiovascular risk and prognosis, are emphasized. The lack of evidence for hormone replacement, antioxidant or universal folic acid therapy is underscored. Treatment options including PTCA and stenting augmented with low molecular weight heparin, clopidrogel and IIb/IIIa antagonists as well as optimal metabolic control are discussed.

Haroun, A., et al. "Magnetic resonance cholangiopancreatography in patients with upper abdominal pain: a prospective study." *Hepato-Gastroenterology.* 50, no. 53(2003): 1236-41 UI 14571708.

BACKGROUND/AIMS: To determine the role of magnetic resonance cholangiopancreatogram with conventional abdominal magnetic resonance examination in patients presenting clinically with upper abdominal pain and abnormal liver function tests and to compare the findings with endoscopic retrograde cholangiopancreatogram results. METHODOLOGY: Magnetic resonance cholangiopancreatogram and endoscopic retrograde cholangiopancreatogram were done in 77 patients. Conventional magnetic resonance examination of the liver and upper abdomen was done first followed by magnetic resonance cholangiopancreatogram using a half fourrier single shot turbo spin echo sequence. Conventional endoscopic retrograde cholangiopancreatogram was done by direct intraductal injection of radiographic contrast material through a duodenoscope under fluoroscopy control. RESULTS: Endoscopic retrograde cholangiopancreatogram failed in 7 patients (9%) and Magnetic resonance cholangiopancreatogram images were inadequate in 3 patients (4%). The findings of adequate magnetic resonance exams in 74 patients were: choledocholithiasis in 24 patients (32%), bile duct stricture in 19 patients (26%), normal biliary ducts in 29 patients (39%) and dilated biliary ducts with no definite cause in 2 patients (3%). The findings of successful endoscopic retrograde cholangiopancreatograms in 67 patients after exclusion of inadequate magnetic resonance cholangiopancreatograms were: choledocholithiasis in 25 patients (37%), bile duct stricture in 18 patients (27%), normal biliary ducts in 21 patients (31%) and dilated biliary ducts with no evident cause in 2 patients (3%) and hemobilia in 1 patient (2%). CONCLUSIONS: Magnetic resonance cholangiopancreatogram is a non-invasive technique, its accuracy is increased if it is combined with conventional abdominal magnetic resonance exam and it can replace the endoscopic retrograde cholangiopancreatogram.

Haythornthwaite, J. A., et al. "Pain coping strategies play a role in the persistence of pain in post-herpetic neuralgia." *Pain.* 106, no. 3(2003): 453-60 UI 14659529.

Post-herpetic neuralgia (PHN) is a neuropathic pain state that is often difficult to treat. Although frequently discussed in the clinical literature, little is known about the impact of pain on daily function and the extent to which psychosocial factors, in particular pain coping strategies, influence adaptation to this chronic illness. In the context of a crossover pharmacological trial, 68 patients with PHN completed a battery of psychological measures during a first drug-free baseline period. Following

discontinuation of approximately 8 weeks of treatment, 49 of these patients completed data collection during a second drug-free assessment prior to beginning a second drug phase. Twice-weekly telephone pain ratings were combined with questionnaire measures of perceived interference due to pain, overall activity level, depressive symptoms, and pain coping strategies. Cross-sectional hierarchical regression analyses indicated that catastrophizing correlated with depressive symptoms but not pain, and coping self-statements were correlated with higher levels of overall activity. Prospective hierarchical regression analyses indicated that catastrophizing at baseline predicted level of pain 8 weeks later, an effect that was independent of baseline pain and depressive symptoms. Patients who reported increasing their activity in response to pain also reported more perceived interference due to pain 8 weeks later. Higher levels of ignoring pain sensations at baseline were prospectively correlated with more depressive symptoms 8 weeks later. These findings support a role for the continued investigation of cognitive-behavioral factors affecting the adaptation of elderly individuals experiencing PHN.

Hendrickson, M., and T. R. Naparst. "Abdominal surgical emergencies in the elderly." *Emergency Medicine Clinics of North America.* 21, no. 4(2003): 937-69 UI 14708814.

The evaluation of abdominal pain can be considerably more challenging in elderly patients. A higher likelihood of life-threatening pathology combined with a myriad of diagnostic pitfalls in this population mandate a more cautious approach with greater use of diagnostic resources and specialist consultation. [References: 153]

Hodl, R., and W. Klein. "The role of low-molecular-weight heparins in cardiovascular medicine." *Journal of Clinical Pharmacy & Therapeutics.* 28, no. 5(2003): 371-8 UI 14632961.

Low-molecular-weight heparins (LMWHs) have been shown to be as effective and safe as unfractionated heparin (UFH) for acute phase treatment of acute coronary syndrome in the absence of ST-elevation [unstable angina/non-ST-elevation myocardial infarction (UA/NSTEMI)]. LMWHs have practical advantages over UFH, including usual lack of requirement for laboratory monitoring of the anticoagulant response because of their favourable pharmacokinetic properties, and thus represent a simpler and more cost-effective option in clinical practice. The LMWH dalteparin has been shown to provide extended therapy benefit to high-risk UA/NSTEMI patients and can provide a protective bridge until revascularization. While revascularization procedures are now an established intervention for patients with UA/NSTEMI, a new approach for patients who cannot undergo immediate catheter intervention is to continue with medical treatment until revascularization is possible. LMWHs are currently being investigated for use in the catheterization laboratory, in patients undergoing percutaneous coronary intervention procedures, and in conjunction with thrombolytics for treatment of acute myocardial infarction. [References: 54]

Hofbauer, R. K., et al. "Dose-dependent effects of propofol on the central processing of thermal pain." *Anesthesiology.* 100, no. 2(2004): 386-94 UI 14739816.

BACKGROUND: Anatomic and physiologic data show that multiple regions of the forebrain are activated by pain. However, the effect of anesthetic level on nociceptive input to these regions is not well understood. METHODS: The authors used positron emission tomography to measure the effect of various concentrations of propofol on pain-evoked changes in regional cerebral blood flow. Fifteen volunteers were scanned while warm and painful heat stimuli were presented to the volar forearm using a contact thermode during administration of target propofol concentrations of 0.0 microg/ml (alert control), 0.5 microg/ml (mild sedation), 1.5 microg/ml (moderate sedation), and 3.5 microg/ml (unconsciousness). RESULTS: During the 0.5-microg/ml target propofol concentration (mild sedation), the subjects' pain

ratings increased relative to the alert control condition; correspondingly, pain-evoked regional cerebral blood flow increased in the thalamus and the anterior cingulate cortex. In contrast, when subjects lost consciousness (3.5 microg/ml), pain-evoked responses in the thalamus and the anterior cingulate cortex were no longer observed, whereas significant pain-evoked activation remained in the insular cortex. CONCLUSION: These data show that propofol has a dose-dependent effect on thalamocortical transfer of nociceptive information but that some pain-evoked cortical activity remains after loss of consciousness.

Holm, I., et al. "Measuring self-reported functional status and pain in patients with chronic low back pain by postal questionnaires: a reliability study." *Spine.* 28, no. 8(2003): 828-33 UI 12698128.

STUDY DESIGN: A reliability study was performed. OBJECTIVES: To evaluate the test-retest reliability of self-reported functional status and pain in chronic low back pain patients by postal questionnaires. SUMMARY OF BACKGROUND DATA: Evaluation tools focusing on the patients' self-reported physical function are recommended in studies on low back pain. Postal questionnaires are inexpensive and should be considered to assess long-term results. The reliability of a postal questionnaire has not been assessed in patients with chronic low back pain. METHODS: Forty-two patients with chronic low back pain (15 men, 27 women; mean age, 40 years; range, 20-61 years) agreed to participate in the study. The mean duration of symptoms was 8.9 years (range, 1-40 years). A postal questionnaire was sent to the patients twice within a 2-week interval. The questionnaire included the following items: work, back satisfaction, General Function Score (GFS), Oswestry Disability Index (ODI), pain, fear-avoidance beliefs, life satisfaction and pain medication. RESULTS: Thirty-seven patients (88%) returned both questionnaires. Except for lumbar pain, there were no statistical differences between the answers from the two questionnaires. The intraclass coefficient values ranged from 0.70 (lumbar pain) to 0.94 (ODI). The repeatability or absolute size of measurement error was 11.9 for the ODI and 28.6 and 34.2 for lumbar and leg pain, respectively. The kappa values for work, back satisfaction, and pain medication were 0.94 and 0.61, 0.62, and 0.64, respectively. The kappa values for the separate items in the GFS ranged from 0.41 to 0.79. The correlations between ODI and the GFS, lumbar pain, life satisfaction, and back satisfaction were 0.35, -0.72, -0.76, and 0.76, respectively. CONCLUSION: The ODI was highly reliable. The questions about work, back satisfaction, and pain medication showed good agreement. The GFS, pain intensity, fear-avoidance beliefs, and life satisfaction appeared to lack sufficient reliability to be recommended in postal questionnaires.

Hsue, P. Y., et al. "Clinical features of acute coronary syndromes in patients with human immunodeficiency virus infection." *Circulation.* 109, no. 3(2004): 316-9 UI 14718406.

BACKGROUND: Patients with HIV infection exhibit increased rates of coronary events; however, the clinical features of acute coronary syndromes (ACS) in HIV-infected patients have not been well defined. METHODS AND RESULTS: Between 1993 and 2003, 68 HIV-infected patients were hospitalized with ACS. We compared the clinical features and outcome of these patients with those of 68 randomly selected control patients with ACS without HIV. HIV patients were on average more than a decade younger than controls and more likely to be male and current smokers and to have low HDL cholesterol. They were less likely than controls to have diabetes or hyperlipidemia, and their TIMI (Thrombolysis In Myocardial Infarction) risk scores on admission were significantly lower. At coronary angiography, the number of vessels with >50% stenosis was 1.3+/-1.0 in HIV patients and 1.9+/-1.2 in controls (P=0.007). Restenosis developed in 15 of 29 HIV patients who underwent percutaneous coronary intervention compared with 3 of 21 controls (52% versus 14%, P=0.006). CONCLUSIONS: HIV patients with ACS are younger and more likely

to be males and current smokers and to have low HDL cholesterol levels compared with other ACS patients. Their TIMI risk scores are lower, and they are more likely to have single-vessel disease; however, their restenosis rates after percutaneous coronary intervention are unexpectedly high.

Ilfeld, B. M., T. E. Morey, and F. K. Enneking. "Infraclavicular perineural local anesthetic infusion: a comparison of three dosing regimens for postoperative analgesia." *Anesthesiology.* 100, no. 2(2004): 395-402 UI 14739817.

BACKGROUND: In this randomized, double-blind study, the authors investigated the efficacy of continuous and patient-controlled ropivacaine infusions via an infraclavicular perineural catheter in ambulatory patients undergoing moderately painful orthopedic surgery at or distal to the elbow. METHODS: Preoperatively, patients (n = 30) received an infraclavicular perineural catheter and nerve block. Postoperatively, patients were discharged home with both oral analgesics and a portable infusion pump delivering 0.2% ropivacaine (500-ml reservoir) in one of three dosing regimens: the basal group (12 ml/h basal, 0.05-ml patient-controlled bolus dose), the basal-bolus group (8 ml/h basal, 4 ml bolus), or the bolus group (0.3 ml/h basal, 9.9 ml bolus). Investigators and patients were blinded to random group assignment. RESULTS: The basal group (n = 10) required more oral analgesics than the basal-bolus group (P = 0.002) and had a shorter median infusion duration than the other two groups (P < 0.001 for both). The bolus group had the longest median infusion duration (P < 0.001 for both) but experienced an increase in breakthrough pain incidence (P = 0.004) and intensity (P = 0.04 vs. basal-bolus group) as well as sleep disturbances (P < 0.001 for both) compared with the other groups. Overall satisfaction was greatest in the basal-bolus group (9.7 +/- 0.5 vs. 7.9 +/- 1.7 and 8.1 +/- 1.5; P < 0.05 for both). CONCLUSIONS: After moderately painful orthopedic surgery at or distal to the elbow, 0.2% ropivacaine delivered as a continuous infusion combined with patient-controlled bolus doses via an infraclavicular perineural catheter optimizes analgesia while minimizing oral analgesic use compared with basal- or bolus-only dosing regimens.

Iwama, H., et al. "A survey of combined epidural-propofol anesthesia with noninvasive positive pressure ventilation as a minimally invasive anesthetic protocol." *Medical Science Monitor.* 9, no. 7(2003): CR316-23 UI 12883451.

BACKGROUND: Combined epidural-propofol anesthesia with use of noninvasive positive pressure ventilation (NPPV) via the nose has been used routinely in our operating theaters. The purpose of this report was to present a survey of this anesthesia. MATERIAL/METHODS: 265 adult patients undergoing lower extremity or lower abdominal gynecological surgery during 1999 were examined. After epidural anesthesia, patients were given propofol infusion. NPPV was applied with an inspiratory/expiratory positive airway pressure of 14/8 cm H2O, a respiratory rate of 10 breaths/min, and oxygen delivery into the nasal mask resulting in a concentration of 40% or an inspiratory oxygen fraction of 0.35. Epidural anesthesia was continuously applied after surgery for postoperative pain relief. Various data related to the surgery or anesthesia were evaluated both on the day of surgery and on postoperative day 1. RESULTS: Of 265 patients, 3 patients could not receive our anesthetic protocol. Of the residual 262 patients, no patients showed serious clinical problems during anesthesia, excluding for hypotension, which was observed in 31-56% patients and was treated with ephedrine injection. Patients informed us of good analgesia (98%), feelings (78%) and dreams (47%). On postoperative day 1, postoperative analgesia and mood conditions were satisfactory. There were no patients complaining of intraoperative awareness. CONCLUSIONS: The principle of our anesthesia consists of epidural anesthesia, sole propofol infusion and noninvasive airway management, so as to provide an anesthetic technique with minimal invasiveness. Although airway maintenance by NPPV is not always suitable, our anesthesia is practicable for certain kinds of operations.

Iwamoto, J., et al. "Comparative effects of treatment with etidronate and alendronate on bone resorption, back pain, and activities of daily living in elderly women with vertebral fractures." *Keio Journal of Medicine.* 52, no. 4(2003): 230-5 UI 14748475.

The purpose of the present study was to compare the effects of treatment with etidronate and alendronate on bone resorption, back pain, and activities of daily living (ADL) in elderly women with vertebral fractures. Fifty elderly women, 63-84 years of age, with back pain due to osteoporotic vertebral fractures were randomly divided into two groups with 25 patients in each group: the cyclical etidronate treatment group (200 mg/day for 2 weeks per 3 months) and the alendronate treatment group (5 mg/day). The level of urinary cross-linked N-terminal telopeptides of type I collagen (NTx) measured by an enzyme-linked immunosorbent assay, back pain evaluated with the face scale score, and the ADL score (disability) determined with a questionnaire were assessed before and 3 and 6 months after the start of treatment. No significant differences in these parameters were found between the two groups before the treatment. The urinary NTx level, the face scale score, and the ADL score decreased significantly in both groups. Although the reduction in the urinary NTx level was significantly greater in the alendronate group than in the etidronate group, the reduction in the face scale score was transiently significantly greater in the etidronate group than in the alendronate group. However, changes in the ADL score did not significantly differ between the two groups. The present study showed that although back pain was reduced and ADL was improved in both treatment groups of elderly women with vertebral fractures, the mechanism for the reduction in back pain differs to some extent between the two treatment groups. A double-blind placebo-controlled study is needed to confirm the therapeutic effects of these agents on back pain and deterioration of ADL.

Jaster, M., et al. "Catheter based intracoronary brachytherapy leads to increased platelet activation." *Heart (British Cardiac Society).* 90, no. 2(2004): 160-4 UI 14729786.

BACKGROUND: Vascular brachytherapy (VBT) after percutaneous coronary intervention (PCI) is associated with a higher risk of stent thrombosis than conventional treatment. OBJECTIVE: To investigate in vivo periprocedural platelet activation with and without VBT, and to assess a possible direct effect of radiation on platelet activation. DESIGN: Of 50 patients with stable angina, 23 received VBT after PCI, while 27 had PCI only. The 23 patients who received VBT after PCI were pretreated for one month with aspirin and clopidogrel. Platelet activation was assessed by flow cytometry. RESULTS: The two patient groups did not differ in their platelet activation before the intervention. There was a significant increase in activation immediately after VBT, with 21.2% (interquartile range 13.0% to 37.6%) thrombospondin positive and 54.0% (42.3% to 63.6%) CD 63 positive platelets compared with 12.7% (9.8% to 14.9%) thrombospondin positive and 37.9% (33.2% to 45.2%) CD 63 positive platelets before the intervention ($p < 0.001$ and $p < 0.01$, respectively). Patients without VBT had no periprocedural difference in platelet activation immediately after PCI. No increase in platelet activation was found after ex vivo irradiation of blood samples obtained from healthy controls. CONCLUSIONS: Catheter based intracoronary VBT carried out according to current standards is highly thrombogenic. The current antithrombotic treatment with aspirin and clopidogrel is not sufficient to suppress platelet activation during the procedure. From in vitro experiments, it appears that platelet activation during brachytherapy is not caused by irradiation but by the procedure of catheter based VBT.

Jessurun, G. A., et al. "Electrical neuromodulation improves myocardial perfusion and ameliorates refractory angina pectoris in patients with syndrome X: fad or future?" *European Journal of Pain: Ejp.* 7, no. 6(2003): 507-12 UI 14575663.

At present, there is no reliable antianginal drug therapy for patients with cardiac syndrome X. Therefore, the effect of electrical neuromodulation on refractory angina pectoris and myocardial perfusion in cardiac syndrome X was assessed. Eight patients (aged 55+/-7 years) with heterogeneous myocardial perfusion and no esophageal abnormalities were included. The subjects were nonresponders to antianginal drug therapy. Angina pectoris attacks and myocardial perfusion dynamics were evaluated by positron emission tomography at baseline and following 4 weeks of (transcutaneous electrical nerve stimulation) TENS. Following TENS there was a reduction of angina pectoris episodes (baseline 20+/-3, TENS 3+/-1; p=0.012), and short acting nitroglycerin intake per week (baseline 10+/-3, TENS 2+/-1; p=0.008). The rate pressure product (mmHg min(-1)) during the cold pressor test (CPT) was reduced during TENS (baseline 12800+/-1200, TENS 11500+/-900; p=0.02). Following TENS, the perfusion reserve ratio between rest and dipyridamole flow increased (baseline 1.59+/-0.15, TENS 1.90+/-0.11 ml min(-1)x 100g; p=0.05). The coronary vascular resistance had a trend towards a reduction (baseline 0.96+/-0.04, TENS 0.85+/-0.06 mmHg min(-1)x 100 g/ml; p=0.06) during CPT. This observation may suggest that neurostimulation improves angina pectoris with a concomitant improvement of myocardial perfusion in cardiac syndrome X.

Jones, J. S., and C. D. Zippe. "Rectal sensation test helps avoid pain of apical prostate biopsy." *Journal of Urology.* 170, no. 6 Pt 1(2003): 2316-8 UI 14634404.

PURPOSE: Apical cores obtained during transrectal prostate biopsy are associated with greater pain than cores obtained from the remainder of the gland. We present a method to minimize this pain. MATERIALS AND METHODS: During 30 consecutive apical biopsies the needle was purposefully placed above all rectal pain fibers, which are anatomically present only below the dentate line. All patients received a periprostatic nerve block prior to biopsy. The patient was asked if he felt the sharp sensation of the needle as it was placed lightly against the rectal mucosa when the needle was aimed at apex (the rectal sensation test). If so, the needle was advanced cranially 2 to 3 mm or until he could no longer detect its light touch. The probe handle was then rotated dorsally, pulling the rectal mucosa downward until the needle was again aimed at the apex. Patients were asked to report a visual analog pain score for each biopsy. These results were compared to those obtained when doing 30 consecutive apical biopsies without the rectal sensation test. RESULTS: The average visual analog pain score for apical biopsy was 1.25 (range 0 to 2.2) for patients in whom the rectal sensation test was used to bypass rectal pain sensory fibers. The average score in control patients in whom the rectal sensation test was not used was higher at 2.28 (range 0.3-6.2). These results were statistically significant (p > 0.0005). CONCLUSIONS: Increased sensitivity to apical prostate biopsy is due to rectal pain fibers located below the dentate line. These fibers and the associated pain may be safely avoided by passing through the rectal wall above the dentate line. The rectal sensation test easily identifies the sensate area below the dentate line. Painless apical biopsy can then be achieved by rotating the ultrasound probe to aim the biopsy needle in the desired path.

Joshi, G. P., et al. "Effective treatment of laparoscopic cholecystectomy pain with intravenous followed by oral COX-2 specific inhibitor." *Anesthesia & Analgesia.* 98, no. 2(2004): 336-42, table of contents UI 14742366.

In this multicenter, double-blinded, randomized, placebo-controlled study we evaluated the analgesic and opioid-sparing efficacy of a preoperative dose of i.v. parecoxib followed by oral valdecoxib in treating pain associated with elective laparoscopic cholecystectomy. Patients were randomized to receive a single i.v. dose of parecoxib 40 mg (n = 134) or placebo (n = 129) 30-45 min before induction of anesthesia. Six to 12 h after the i.v. dose, the parecoxib group received a single oral dose of valdecoxib 40 mg, followed by valdecoxib 40 mg qd on postoperative days 1-4, then 40 mg qd prn days 5-7. The placebo i.v. group received oral placebo on an

identical schedule. All patients were allowed supplemental i.v. fentanyl as needed during the first 4 h postoperatively (T0-240 min) followed by hydrocodone 5 mg/acetaminophen 500 mg (Vicodin(R); 1-2 tablets orally every 4-6 h as needed). Patients taking parecoxib used 21% less fentanyl than those receiving placebo (P = 0.011). The mean area under the curve of pain intensity (PI) scores over time from T0-240 min was 55.2 for parecoxib and 61.2 for placebo (P = 0.083). At T180 and T240 min, mean PI score was 7.0 and 7.6 points lower in the parecoxib group, respectively (P < 0.02). Fewer patients on valdecoxib required supplemental analgesics (P < 0.05) after discharge. At T240 min and at day 7, Patient's and Physician's/Nurse's Global Evaluations were significantly better in the parecoxib/valdecoxib group (P < 0.05). Incidences of adverse events, adverse events causing withdrawal, and serious adverse events were less for parecoxib/valdecoxib than for placebo. The authors conclude that preoperative parecoxib is a valuable opioid-sparing adjunct to the standard of care for treating pain after laparoscopic cholecystectomy, and subsequent treatment with oral valdecoxib extends this clinical benefit. IMPLICATIONS: Parecoxib 40 mg i.v., 30-45 min preoperatively followed by oral valdecoxib 40 mg qd reduced opioid requirements and provided superior pain relief as well as improved patient global evaluation after laparoscopic cholecystectomy.

Kaasalainen, S., and J. Crook. "A comparison of pain-assessment tools for use with elderly long-term-care residents." *Canadian Journal of Nursing Research.* 35, no. 4(2003): 58-71 UI 14746121.

The purpose of this study was to examine the psychometric properties (test-retest and interrater reliability, criterion concurrent validity) of 3 verbal pain-assessment tools (Faces Pain Scale, Numerical Rating Scale, Present Pain Intensity Scale) and a behavioural pain-assessment scale for use with an elderly population. The study used a repeated-measures design to examine the reliability and validity of the tools across 4 groups of participants with varying levels of cognitive impairment using a non-random stratified sample of 130 elderly long-term-care residents. The findings support the test-retest and interrater reliability of the behavioural pain-assessment tool across all levels of cognitive impairment, whereas the same measures of reliability for the verbal-report tools decreased with increasing cognitive impairment; however, the majority of elderly with mild to moderate cognitive impairment were able to complete at least 1 of these tools. The findings are discussed in relation to their clinical and research implications.

Kaphan, E., et al. "Shortlasting, unilateral, neuralgiform headache attacks with conjunctival injection and tearing (SUNCT syndrome) and tumour of the cavernous sinus." *Cephalalgia.* 23, no. 5(2003): 395-7 UI 12780771.

Karppinen, J., et al. "Tumor necrosis factor-alpha monoclonal antibody, infliximab, used to manage severe sciatica." *Spine.* 28, no. 8(2003): 750-3; discussion 753-4 UI 12698115.

STUDY DESIGN: An open-label study was conducted. OBJECTIVE: To evaluate the efficacy and safety of infliximab, a monoclonal chimeric antibody, against tumor necrosis factor-alpha (TNFalpha) for the treatment of severe sciatica. SUMMARY OF BACKGROUND DATA: Evidence from animal studies indicates that TNFalpha plays a role in the pathophysiology of sciatica. Anti-TNFalpha therapy has not been previously evaluated in sciatic patients. METHODS: In this study, 10 patients with disc herniation-induced severe sciatica received infliximab (Remicade 3 mg/kg) intravenously over 2 hours. The outcome was assessed at 1 hour, 1 week, 2 weeks, 1 month, and 3 months after the infusion and compared to historical control subjects consisting of 62 patients who received saline in a trial of periradicular infiltration for sciatica. Leg pain was the primary outcome, with more than a 75% decrease from the baseline score constituting a painless state. Fisher's exact test and repeated

measures analysis of variance were used for statistical analysis. RESULTS: At 1 hour after the infusion, leg pain had decreased by 50%. At 2 weeks, 60% of the patients in the infliximab group were painless, as compared with 16% of the control patients (P = 0.006). The difference was sustained at 3 months (90% vs 46%; P = 0.014). Infliximab was superior over the whole follow-up period in terms of leg pain (P = 0.003) and back-related disability (P = 0.004). At 1 month, every patient in the infliximab group had returned to work, whereas 38% of the control subjects still were on sick leave (P = 0.02). None of the patients treated with infliximab underwent surgery during the follow-up period. No immediate or delayed adverse drug reactions and no adverse effects related to medication were observed. CONCLUSIONS: Anti-TNFalpha therapy is a promising treatment option for sciatica. There is an urgent need for a randomized controlled trial to evaluate whether thesepromising early results can be confirmed.

Kennedy, S., et al. "The significance of needle deflection in success of the inferior alveolar nerve block in patients with irreversible pulpitis." *Journal of Endodontics.* 29, no. 10(2003): 630-3 UI 14606783.

The purpose of this prospective, randomized, blinded study was to compare the anesthetic efficacy of the conventional inferior alveolar nerve block, administered with the needle bevel oriented away from the mandibular ramus, to the bidirectional-needle-rotation technique, administered using the computer-assisted Wand II anesthesia system, in patients diagnosed with irreversible pulpitis. Sixty-four emergency patients diagnosed with irreversible pulpitis of a mandibular posterior tooth randomly received, in a blinded manner, 2.8 ml of 2% lidocaine with 1:100,000 epinephrine using either a conventional inferior alveolar nerve block or a bidirectional-needle-rotational technique using the Wand II injection system. The conventional inferior alveolar nerve block was administered with the needle bevel oriented away from the mandibular ramus so the needle would deflect inward toward the mandibular foramen. The bidirectional-needle-rotation technique was administered by rotating the Wand handpiece assembly in a clockwise-counterclockwise movement (like an endodontic hand file) to minimize needle deflection. Endodontic access was begun 17 min after solution deposition, and all patients were required to have profound lip numbness. Success was defined as none or mild pain (VAS recordings) on endodontic access or initial instrumentation. The results of this study showed no significant differences ($p > 0.05$) between the success rates of the two techniques. The conventional inferior alveolar nerve block, with the needle bevel oriented away from the mandibular ramus, had a 50% success rate. The bidirectional-needle-rotation technique with the Wand II had a 56% success rate. Neither technique resulted in an acceptable rate of anesthetic success in patients with irreversible pulpitis.

Klepstad, P., et al. "Routine drug monitoring of serum concentrations of morphine, morphine-3-glucuronide and morphine-6-glucuronide do not predict clinical observations in cancer patients." *Palliative Medicine.* 17, no. 8(2003): 679-87 UI 14694919.

The clinical importance of routine drug monitoring of serum concentrations of morphine, morphine-6-glucuronide (M6G) and morphine-3-glucuronide (M3G) during chronic morphine therapy is not established. We measured morphine, M6G and M3G serum concentrations in cancer pain patients receiving oral (n = 263, median dose 80 mg/24 hours) or subcutaneous (sc) (n = 35, median dose 110 mg/24 hours) morphine. Regression analyses were performed to investigate if serum concentrations of morphine, M3G and M6G predicted pain intensity (Brief Pain Inventory), health-related quality-of-life variables (EORTC QLQ-C30) and cognitive function (Mini-Mental Score). Serum concentrations were also compared in patients categorized as morphine 'treatment successes' and 'treatment failures'. We observed that serum concentrations of morphine, M6G or M3G did not predict pain intensity,

cognitive function, nausea or tiredness. 'Treatment failures' caused by nausea, tiredness, cognitive failure or constipation did not have statistically significant different morphine, M6G and M3G serum concentrations than patients classified as 'treatment successes'. In conclusion, this study did not observe any concentration-effect relationships of morphine, M3G or M6G with pain intensity, nausea, constipation, tiredness or cognitive failure in blood samples obtained during routine clinical drug monitoring in cancer patients. This result suggests that therapeutic drug monitoring as a routine tool during chronic morphine treatment has limited value for clinical decision making.

Knight, D. "Which heparin is best. When cardiac catheterization is needed, know your heparins." *AJN, American Journal of Nursing.* 103, no. 12(2003): 81 UI 14702571.

Kohli, V., et al. "Off-pump surgery: a choice in unstable angina." *Asian Cardiovascular & Thoracic Annals.* 11, no. 4(2003): 285-8 UI 14681085.

The benefit and safety of off-pump coronary artery bypass surgery in patients with unstable angina was assessed retrospectively. From February 1996 to October 2001, 5,306 patients underwent multivessel off-pump coronary artery bypass, of whom 920 (17%) had unstable angina. In these 920 patients, ejection fractions ranged from 15% to 70%, 203 (22%) had an ejection fraction of 20%-35%, and 11 (1%) had an ejection fraction < 20%. Triple-vessel disease was present in 625 patients. Preoperative intraaortic balloon pump support was used in 28 patients. Operative approaches included mid sternotomy (86%), lower partial sternotomy (9%), and left anterior thoracotomy (2%). The number of grafts ranged from 1 to 5 with a mean of 2.43 +/- 0.86, and 92.3% of patients received a left internal mammary artery graft. Twenty-two patients need intraoperative intraaortic balloon pumping. Ten patients (1%) suffered perioperative myocardial infarction. The mean hospital stay was 7.8 +/- 4.3 days. Hospital mortality was 2/920 (0.22%). Intraaortic balloon pumping was helpful in these cases of unstable angina refractory to medical therapy. Off-pump coronary artery surgery was found to be safe and beneficial in these patients.

Kornick, C. A., et al. "Benefit-risk assessment of transdermal fentanyl for the treatment of chronic pain." *Drug Safety.* 26, no. 13(2003): 951-73 UI 14583070.

Transdermal fentanyl is effective and well tolerated for the treatment of chronic pain caused by malignancy and non-malignant conditions when administered according to the manufacturer's recommendations. Compared with oral opioids, the advantages of transdermal fentanyl include a lower incidence and impact of adverse effects (constipation, nausea and vomiting, and daytime drowsiness), a higher degree of patient satisfaction, improved quality of life, improved convenience and compliance resulting from administration every 72 hours, and decreased use of rescue medication. Transdermal fentanyl is a useful analgesic for cancer patients who are unable to swallow or have gastrointestinal problems. Transdermal fentanyl forms a depot within the upper skin layers before entering the microcirculation. Therapeutic blood levels are attained 12-16 hours after patch application and decrease slowly with a half-life of 16-22 hours following removal. Patients with chronic pain should be titrated to adequate relief with short-acting oral or parenteral opioids prior to the initiation of transdermal fentanyl in order to prevent exacerbations of pain or opioid-related adverse effects. Transdermal fentanyl can then be initiated based on the 24-hour opioid requirement once adequate analgesia has been achieved. The prolonged elimination of transdermal fentanyl can become problematic if patients develop opioid-related adverse effects, especially hypoventilation. Adverse effects do not improve immediately after patch removal and may take many hours to resolve. Patients who experience opioid-related toxicity associated with respiratory depression should be treated immediately with an opioid antagonist such as naloxone and closely monitored for at least 24 hours. Because of

the short half-life of naloxone, sequential doses or a continuous infusion of the opioid antagonist may be necessary. Transdermal fentanyl should be administered cautiously to patients with pre-existing conditions such as emphysema that may predispose them to the development of hypoventilation. Transdermal fentanyl is indicated only for patients who require continuous opioid administration for the treatment of chronic pain that cannot be managed with other medications. It is contraindicated in the management of acute and postoperative pain, as pain may decrease more rapidly in these circumstances than fentanyl blood levels can be adjusted, leading to the development of life-threatening hypoventilation. Cognitive and physical impairments such as confusion and abnormal co-ordination can occur with transdermal fentanyl. Therefore, patients should be instructed to refrain from driving or operating machinery immediately following the initiation of transdermal fentanyl, or after any dosage increase. Patients may resume such activities once the absence of these potential adverse effects is documented. [References: 119]

Kovacs, F. M., et al. "Correlation between pain, disability, and quality of life in patients with common low back pain." *Spine.* 29, no. 2(2004): 206-10 UI 14722416.

STUDY DESIGN: Correlation among previously validated questionnaires. OBJECTIVES: To determine the correlation between pain, disability, and quality of life in patients with low back pain. SUMMARY OF BACKGROUND DATA: The Visual Analogue Scale (VAS), and the Roland-Morris (RMQ), Oswestry (OQ), and EuroQol (EQ) Questionnaires are validated instruments to assess pain, low back pain-related disability, and quality of life. METHODS: The study was done in the primary care setting, in Mallorca, with 195 patients who visited their physician for LBP. Individuals were given the VAS, RMQ, OQ, and EQ on their first visit and 14 days later. RESULTS: Median duration of pain when entering the study was 10 days (P25,P75: 3, 40). On day 1, simple correlation was r = 0.347 between VAS and RMQ, r = -0.422 between VAS and EQ, and r = -0.442 between RMQ and EQ. On day 15, simple correlation was r = 0.570 between VAS and RMQ, r = -0.672 between VAS and EQ, and r = -0.637 between RMQ and EQ. Multiple linear regression models showed that, on day 1, the VAS score explains 12% of the RMQ score and the VAS and RMQ scores explain 27% of the EQ score. On day 15, the VAS score explains 33% of the RMQ score, and the VAS and RMQ scores explain 58% of the EQ score. On day 1, a 10% increase in VAS worsens disability by 3.3% and quality of life by 2.65%. On day 15, a 10% increase in VAS worsens disability by 4.99% and quality of life by 3.80%. Prestudy duration of pain had no influence on any model. All these correlation coefficients and models are significant at the P < 0.001 level. The OQ had lower correlation values with the other three scales, and only two of them were significant. CONCLUSION: Clinically relevant improvements in pain may lead to almost unnoticeable changes in disability and quality of life. Therefore, these variables should be assessed separately when evaluating the effect of any form of treatment for low back pain. The influence of pain and disability on quality of life progresses while they last, and doubles in 14 days. In acute and subacute patients, this increase is not dependent on the previous duration of pain.

Kreisler, M. B., et al. "Efficacy of low level laser therapy in reducing postoperative pain after endodontic surgery-- a randomized double blind clinical study." *International Journal of Oral & Maxillofacial Surgery.* 33, no. 1(2004): 38-41 UI 14758818.

The aim of the study was to evaluate the effect of low level laser application on postoperative pain after endodontic surgery in a double blind, randomized clinical study. Fifty-two healthy adults undergoing endodontic surgery were included into the study. Subsequently to suturing, 26 patients had the operation site treated with an 809 nm-GaAlAs-laser (oralaser voxx, Oralia GmbH, Konstanz, Germany) at a power output of 50 mW and an irradiation time of 150 s. Laser treatment was simulated in

further 26 patients. Patients were instructed to evaluate their postoperative pain on 7 days after surgery by means of a visual analogue scale (VAS). The results revealed that the pain level in the laser group was lower than in the placebo group throughout the 7 day follow-up period. The differences, however, were significant only on the first postoperative day (Mann-Whitney U-test, $p<0.05$). Low level laser therapy can be beneficial for the reduction of postoperative pain. Its clinical efficiency and applicability with regard to endodontic surgery, however require further investigation. This is in particular true for the optimal energy dosage and the number of laser treatments needed after surgery.

Kumar, R. J., K. V. Menon, and T. C. Ranjith. "Use of epidural analgesia for pain management after major spinal surgery." *Journal of Orthopaedic Surgery.* 11, no. 1(2003): 67-72 UI 12810975.

OBJECTIVE: This is a retrospective study of the role of postoperative epidural analgesia in major spinal surgical procedures. With the number and complexity of the procedures performed on the spine ever-increasing, this method of analgesia is becoming more important. METHODS: Results of 74 consecutive cases of major spinal surgeries between January 2000 and January 2001 at the Spine Division, Amritha Institute of Medical Sciences and Research Centre, Kochi, India, were studied. 32 cases were posterior procedures and the other 42 were anterior procedures of the thoracic and lumbar regions. The use of various combinations of local anaesthetic and opioid to control postoperative pain after spinal surgery were analysed. RESULTS: 36 (49%) of 74 patients did not require any parenteral supplements. Of the remaining 38 patients who required supplementary parenteral analgesia in the first 48 hours, 25 (34%) received a single dose and 13 (18%) required more than one dose. The number of patients requiring parenteral analgesia immediately after operation were 11; between 2 and 6 hours were 12; and between 6 and 24 hours were 11. Of the 74 patients, 67 had a sound sleep after epidural administration. There were 2 cases of respiratory depression and 2 of transient hypotension. CONCLUSION: Most epidural analgesic regimens significantly reduced postoperative pain, and the requirement for supplementary parenteral analgesics was minimal. Adverse effects were rare, yet we recommend that patients treated with this protocol be managed in high-dependency units.

LeResche, L., et al. "Changes in temporomandibular pain and other symptoms across the menstrual cycle." *Pain.* 106, no. 3(2003): 253-61 UI 14659508.

The objective of this study was to assess changes in levels of clinical temporomandibular (TMD) pain in relation to phases of the menstrual cycle. TMD cases were 35 women not using oral contraceptives (OCs); 35 women using OCs; and 21 men. Controls were 35 normally cycling women without TMD or other chronic pains. Subjects kept daily diaries over three menstrual cycles, reporting average and worst pain, general and premenstrual symptoms. Data were subject-centered and de-trended using the residuals from a random-effects linear regression model. To test for cyclic variation, cycles were standardized to 28 days and data were grouped into 9 periods/cycle (Days 1-3, 4-6, em leader, 22-24, 25-28). Overall levels of average pain, worst pain and symptoms did not differ across TMD subject groups. For worst pain, multivariate analysis of variance revealed a statistically significant difference across 3-day periods for normally cycling women with TMD ($P=0.011$) and for women using OCs ($P=0.017$). In both groups, TMD pain levels rose toward the end of the cycle and peaked during menstruation. In women not using OCs, there was a secondary pain peak at Days 13-15, around the time of ovulation. This peak was not seen in women using OCs. There was no statistically significant difference over time periods for men ($P=0.94$). Similar patterns were found for average pain, as well as PMS symptoms and general somatic symptoms. These results suggest that TMD pain in women is highest at times of lowest estrogen, but rapid estrogen change may also be associated with increased pain.

Licciardone, J. C., et al. "Osteopathic manipulative treatment for chronic low back pain: a randomized controlled trial." *Spine.* 28, no. 13(2003): 1355-62 UI 12838090.

STUDY DESIGN: A randomized controlled trial was conducted. OBJECTIVE: To determine the efficacy of osteopathic manipulative treatment as a complementary treatment for chronic nonspecific low back pain. SUMMARY OF BACKGROUND DATA: Osteopathic manipulative treatment may be useful for acute or subacute low back pain. However, its role in chronic low back pain is unclear. METHODS: This trial was conducted in a university-based clinic from 2000 through 2001. Of the 199 subjects who responded to recruitment procedures, 91 met the eligibility criteria. They were randomized, with 82 patients completing the 1-month follow-up evaluation, 71 completing the 3-month evaluation, and 66 completing the 6-month evaluation. The subjects were randomized to osteopathic manipulative treatment, sham manipulation, or a no-intervention control group, and they were allowed to continue their usual care for low back pain. The main outcomes included the SF-36 Health Survey, a 10-cm visual analog scale for overall back pain, the Roland-Morris Disability Questionnaire, lost work or school days because of back pain, and satisfaction with back care. RESULTS: As compared with the no-intervention control subjects, the patients who received osteopathic manipulative treatment reported greater improvements in back pain, greater satisfaction with back care throughout the trial, better physical functioning and mental health at 1 month, and fewer cotreatments at 6 months. The subjects who received sham manipulation also reported greater improvements in back pain and physical functioning and greater satisfaction than the no-intervention control subjects. There were no significant benefits with osteopathic manipulative treatment, as compared with sham manipulation. CONCLUSIONS: Osteopathic manipulative treatment and sham manipulation both appear to provide some benefits when used in addition to usual care for the treatment of chronic nonspecific low back pain. It remains unclear whether the benefits of osteopathic manipulative treatment can be attributed to the manipulative techniques themselves or whether they are related to other aspects of osteopathic manipulative treatment, such as range of motion activities or time spent interacting with patients, which may represent placebo effects.

List, T., S. Axelsson, and G. Leijon. "Pharmacologic interventions in the treatment of temporomandibular disorders, atypical facial pain, and burning mouth syndrome. A qualitative systematic review." *Journal of Orofacial Pain.* 17, no. 4(2003): 301-10 UI 14737874.

AIMS: To carry out a systematic review of the literature in order to assess the pain-relieving effect and safety of pharmacologic interventions in the treatment of chronic temporomandibular disorders (TMD), including rheumatoid arthritis (RA), as well as atypical facial pain (AFP), and burning mouth syndrome (BMS). METHODS: Study selection was based on randomized clinical trials (RCTs). Inclusion criteria included studies on adult patients (> or = 18 years) with TMD, RA of the temporomandibular joint (TMJ), AFP, or BMS and a pain duration of > 3 months. Data sources included Medline, Cochrane Library, Embase, and Psych Litt. RESULTS: Eleven studies with a total of 368 patients met the inclusion criteria. Four trials were on TMD patients, 2 on AFP, 1 on BMS, 1 on RA of the TMJ, and 3 on mixed groups of patients with TMD and AFP. Of the latter, amitriptyline was effective in 1 study and benzodiazepine in 2 studies; the effect in 1 of the benzodiazepine studies was improved when ibuprofen was also given. One study showed that intra-articular injection with glucocorticoid relieved the pain of RA of the TMJ. In 1 study, a combination of paracetamol, codeine, and doxylamine was effective in reducing TMD pain. No effective pharmacologic treatment was found for BMS. Only minor adverse effects were reported in the studies. CONCLUSION: The common use of analgesics in TMD, AFP, and BMS is not supported by scientific evidence. More large RCTs are

needed to determine which pharmacologic interventions are effective in TMD, AFP, and BMS. [References: 69]

Lloyd-Jones, D. M., et al. "Predictors of long-term mortality after hospitalization for primary unstable angina pectoris and non-ST-elevation myocardial infarction." *American Journal of Cardiology.* 92, no. 10(2003): 1155-9 UI 14609588.

Data are sparse regarding long-term outcomes after hospitalization for unstable angina pectoris (UAP) and non-ST-elevation myocardial infarction (NSTEMI), as defined by contemporary criteria. We extended follow-up in a preexisting database of unselected patients with primary UAP and NSTEMI admitted by way of the emergency department from 1991 to 1992. Stepwise Cox models were used to identify multivariate predictors of long-term mortality. There were 275 patients (mean age 66 +/- 12 years, 33% women) who survived to hospital discharge; 134 patients (49%) died during follow-up (median 9.4 years). Significant multivariate predictors of long-term mortality were: age (hazard ratio [HR] per decade 1.7, 95% confidence interval [CI] 1.4 to 1.9); prior MI (HR 1.7, 95% CI 1.2 to 2.5); diabetes (HR 1.7, 95% CI 1.2 to 2.4); congestive heart failure (HR 2.2, 95% CI 1.5 to 3.4); elevated creatinine (HR 2.5, 95% CI 1.7 to 3.8); elevated leukocyte count (HR 1.7, 95% CI 1.1 to 2.5); systolic blood pressure <120 mm Hg at presentation (HR 2.0, 95% CI 1.1 to 3.6); lack of coronary revascularization during the index hospitalization (HR 2.0, 95% CI 1.3 to 3.0); and lack of discharge beta-blocker therapy (HR 1.5, 95% CI 1.1 to 2.2). A clinical prediction rule was generated by assigning weighted point scores for the presence of each significant covariate. Long-term mortality increased markedly with each quintile of score; for quintiles 1 to 5, mortality rates were 8.5%, 29.4%, 47.6%, 75.0%, and 91.5%, respectively (p value for trend <0.001). These data are among the first assessments of long-term mortality after hospitalization for primary UAP and NSTEMI, as defined by contemporary guideline criteria. Easily obtained clinical covariates provide excellent prediction of long-term mortality up to 10 years after hospitalization for primary UAP and NSTEMI.

Luo, X., et al. "Reliability, validity, and responsiveness of the short form 12-item survey (SF-12) in patients with back pain." *Spine.* 28, no. 15(2003): 1739-45 UI 12897502.

STUDY DESIGN: Secondary analysis of data collected from spine patients' normal clinic visits from 1998 to 2001. OBJECTIVE: To evaluate the reliability, validity, and responsiveness of the short form 12-item survey in patients with back pain. SUMMARY OF BACKGROUND DATA: The reliability, validity, and responsiveness of the short form 12-item survey in patients with back pain has not been previously evaluated. METHODS: Patients were asked to complete a comprehensive computerized survey questionnaire during their regular clinic visits. A total of 2520 patients who indicated in their first surveys that they had back pain were included in the study of the reliability and validity of the short form 12-item survey. Of these, 506 patients completed another survey within 3-6 months of follow-up and were included in the responsiveness evaluation. RESULTS: The two summary scales of the short form 12-item survey, physical component summary and mental component summary, demonstrated internal consistency reliability, with Cronbach alpha for both scales exceeding the recommended level of 0.70. Correlation of physical component summary and mental component summary with six other measures theoretically related or unrelated to these scales performed as expected without exception, demonstrating the construct validity of the short form 12-item survey. The responsiveness of the short form 12-item survey was supported by several pieces of evidence. First, the changes in physical component summary and mental component summary scores were correlated with the changes in back pain intensity. Second, for patients whose back pain improved, there was a significant increase in the follow-up physical component summary and mental component summary scores as compared

to the baseline. Third, small to moderate effect size was observed for patients whose back pain became improved or became worse. CONCLUSIONS: The short form 12-item survey demonstrated good internal consistency reliability, construct validity, and responsiveness in patients with back pain.

Makhsous, M., et al. "Sitting with adjustable ischial and back supports: biomechanical changes." *Spine.* 28, no. 11(2003): 1113-21; discussion 1121-2 UI 12782977.

STUDY DESIGN: The seat and back contact force, pressure distribution, lumbar lordosis, and low back muscle activities associated with a new seat design with adjustable ischial support and backrest were investigated using kinematic, kinetic, electromyographic, and radiographic measurements. OBJECTIVES: To investigate the biomechanical effects of adjusting ischial and backrest supports during sitting. SUMMARY OF THE BACKGROUND DATA: Sitting may induce posterior rotation of the pelvis, reduction of lumbar lordosis, and increases in muscle tension, disc pressure, and pressure on the ischium and coccyx, which may be associated with low back pain. A device that reduces the ischial load and maintains lumbar lordosis may help increase seating comfort and reduce low back pain. METHODS: Fifteen office workers with no known low back pain history were tested. Contact pressure distributions, reaction forces between the buttock-thighs and seat and between the back and backrest, load carried by the seat pan and backrest, sacral inclination, lumbar lordosis, intervertebral space of lumbar spine, and muscular activity in stabilizing the trunk were measured for sitting with and without ischial support and with adjustable back support. RESULTS: When the ischial support was relieved, the center of the force on the seat and on the legs of the chair, and the peak center of pressure on the seat, were significantly ($P < 0.002$) shifted forward toward the thighs. The total contact area on the seat pan and on the backrest was significantly decreased and increased, respectively ($P < 0.001$). The sacral inclination, total and segmental lumbar lordosis, and lumbar spine disc height were significantly increased for sitting upright with backrest, with the lumbar curve close to that during standing. CONCLUSIONS: Sitting with reduced ischial support and fitted backrest to the lower spine altered the contact area, reduced peak pressure under the ischia, reduced muscular activity, maintained total and segmental lumbar lordosis, rotated the sacrum forward, and increased lumbar intervertebral disc heights, which could potentially reduce low back pain.

Mann, C., Y. Pouzeratte, and J. J. Eledjam. "Postoperative patient-controlled analgesia in the elderly: risks and benefits of epidural versus intravenous administration." *Drugs & Aging.* 20, no. 5(2003): 337-45 UI 12696994.

Postoperative patient-controlled analgesia provided by the intravenous route using morphine (PCA) or by the epidural route using an opioid in combination with a local anaesthetic (patient-controlled epidural analgesia; PCEA) is not yet routinely used in the elderly. However, this modality theoretically provides adequate control of postoperative pain in such patients. Firstly, an assessment of the level of pain is particularly difficult in the elderly, and patient-controlled techniques that enable the self-administration of analgesic could resolve this problem. Secondly, these techniques provide a fine and controlled titration of analgesic doses. Since analgesic-induced adverse effects increase with age, the risk of overdose is therefore reduced. Thirdly, effective postoperative patient-controlled analgesia may attenuate detrimental physiologic responses, and contribute to improvement in patient outcomes. In the elderly, PCEA provides better pain relief, particularly for dynamic pain, and improves postoperative recovery with a low incidence of adverse effects compared with PCA. PCA and PCEA techniques have a good safety profile in the elderly only when there is careful preoperative patient selection and strict postoperative monitoring. Standard observation of vital signs, sedation and pain scores and assessment of mental status are required. Patient selection is necessary

to identify those patients who may be incapable of using the device (e.g. patients with evidence of cognitive dysfunction or physical disabilities). In addition, caution is required among patients with respiratory, renal or hepatic insufficiency. PCA and PCEA are particularly useful for elderly patients undergoing major thoraco-abdominal surgery. However, there is a need for further research in elderly patients. In the future, improvements in the management of postoperative pain in the elderly will lead to a greater expansion of self-controlled techniques. [References: 70]

McCaffrey, R., and E. Freeman. "Effect of music on chronic osteoarthritis pain in older people." *Journal of Advanced Nursing.* 44, no. 5(2003): 517-24 UI 14651700.

BACKGROUND: Osteoarthritis is the most common degenerative disease in humans. It usually begins in middle age and is progressive. Chronic pain in older people presents a significant obstacle in maintaining function and independence. Previous studies have shown that music can improve motivation, elevate mood, and increase feelings of control in older people. PURPOSE: The purpose of this randomized clinical trial was to examine the influence of music as a nursing intervention on osteoarthritis pain in elders. METHOD: Data were collected using the short form of the McGill Pain Questionnaire with 66 elders suffering from chronic osteoarthritis pain. Differences in perceptions of pain were measured over 14 days in an experimental group who listened to music for 20 minutes daily and a control group who sat quietly for 20 minutes daily. All participants completed the Short Form McGill Pain Questionnaire (SF-MPQ) on day 1, 7, and 14 of the study. RESULTS: Results of t-tests indicated that those who listened to music had less pain on both the Pain Rating Index on day 1 (P = 0.001), day 7 (P = 0.001) and day 14 (P = 0.001) and on the Visual Analogue Scale on day 1 (P = 0.001), day 7 (P = 0.001) and day 14 (P = 0.001), when compared with those who sat quietly and did not listen to music. A repeated measure analysis of variance controlling for pretest measures demonstrated a significant decrease in pain among experimental group participants when compared with the control group on the pain descriptor section of the SF-MPQ (P = 0.001) and the visual analogue portion of the SF-MPQ (P = 0.001). CONCLUSION: Listening to music was an effective nursing intervention for the reduction of chronic osteoarthritis pain in the community-dwelling elders in this study.

Mehta, N. M., A. Malootian, and J. P. Gilligan. "Calcitonin for osteoporosis and bone pain." *Current Pharmaceutical Design.* 9, no. 32(2003): 2659-76 UI 14529539.

Calcitonin has been approved for the treatment of osteoporosis and other diseases involving accelerated bone turnover for approximately 25 years. The most commonly studied and prescribed form is salmon calcitonin, which has a greater efficacy in clinical use. A wealth of well-controlled clinical studies have demonstrated that calcitonin preserves or increases bone mineral density (BMD) and reduces the risk of vertebral fractures in osteoporosis. Recent studies have indicated that while a low BMD is correlated with an increase in fracture risk, increases in BMD alone do not explain the antifracture efficacy of antiresorptive therapies such as calcitonin. Therapies that moderately increase BMD may reduce fracture risk by reducing the rate of bone turnover and maintaining the integrity of the trabecular architecture, resulting in the preservation of bone strength and quality in osteoporotic patients. An advantage of calcitonin that is not shared by other antiresorptive therapies is its direct analgesic effect on bone pain. Calcitonin has been demonstrated to be clinically useful in improving pain, not only from the acute vertebral fractures of osteoporosis, but also in Paget's disease, bone malignancies, and other sources of musculoskeletal pain. Drugs containing calcitonin may be approved for additional indications in the near future, and as more convenient routes of administration such as the oral route become available, the demand for the calcitonin peptide is expected to increase. [References: 142]

Miaskowski, C. "Valuing what is old and ancient." *Pain Management Nursing.* 4, no. 4(2003): 143-4 UI 14663791.

Miller, P. L., and A. A. Ernst. "Sex differences in analgesia: a randomized trial of mu versus kappa opioid agonists." *Southern Medical Journal.* 97, no. 1(2004): 35-41 UI 14746420.

OBJECTIVES: We sought to evaluate whether there is a sex difference in the analgesic response to mu versus kappa opioids in the management of acute moderate to severe pain of injury in the emergency department. METHODS: The study was a randomized, double-blind, clinical trial comparing the prototypical mu-receptor agonist, morphine sulfate, to the prototypical kappa agonist, butorphanol. The primary endpoints were degree of relief by visual analog scores at 30 and 60 minutes. Statistical analysis was performed using Mann-Whitney Utest for nonparametric analysis and repeated-measures analysis of variance. RESULTS: Ninety-four patients were entered in the study, with 49 (52%) males and 45 (48%) females. Forty-six received morphine sulfate and 48 received butorphanol. There was no difference in demographics in the two groups. At 60 minutes, females had significantly lower visual analog scores with butorphanol compared with morphine (P = 0.046). At 60 minutes, there was a trend for a difference in response of males versus females to morphine, with males responding better than females (P = 0.06). CONCLUSION: Females had better pain scores with butorphanol than morphine at 60 minutes.

Mongini, F., et al. "Confirmation of the distinction between chronic migraine and chronic tension-type headache by the McGill Pain Questionnaire." *Headache.* 43, no. 8(2003): 867-77 UI 12940808.

OBJECTIVE: To investigate if the McGill Pain Questionnaire confirms the distinction between chronic migraine and chronic tension-type headache. BACKGROUND: It has been suggested that different categories of chronic daily headache should be distinguished; in particular, chronic migraine and chronic tension-type headache. METHODS: The McGill Pain Questionnaire and a visual analog scale were administered to 40 patients with chronic daily headache, 85 patients with migraine, and 47 patients with episodic tension-type headache. The patients with chronic daily headache were subdivided, according to criteria described by other authors, into those with chronic migraine (n=29) and those with chronic tension-type headache (n=11). Weighted McGill Pain Questionnaire item scores, subscales, total pain rating indexes, and choice frequency of the descriptors were calculated. The data of chronic migraine and chronic tension-type headache were compared and tested for significant differences (Student t test). The same was done for migraine and episodic tension-type headache. Data were also processed through the Self-organizing Map, a system based on a counter-propagation neural network. RESULTS: In the chronic migraine group, compared with the chronic tension-type headache group, scores were higher in 17 of 20 McGill Pain Questionnaire items (significantly in 5) and for the sensory and affective subscales (significantly). In the migraine group, compared with the episodic tension-type headache group, scores were higher for 18 McGill Pain Questionnaire items (significantly in 7), and for the sensory, affective, and mixed affective-evaluative subscales, total pain-rating index, and visual analog scale (all significantly). The coincidence of descriptors of first choice was low between chronic migraine and chronic tension-type headache, but it was high between chronic migraine and migraine and between chronic tension-type headache and episodic tension-type headache. After Self-organizing Map analysis, chronic migraine and chronic tension-type headache were prevalently distributed in 2 different areas of the map. CONCLUSIONS: In the disorders characterized by a daily and near-daily headache, the McGill Pain Questionnaire consistently can discriminate between those evolving from migraine and those evolving from tension-type

headache, indirectly confirming the validity of a distinction between these 2 clinical conditions. The differences are similar to those observed between patients with migraine and patients with episodic tension-type headache. This seems to be independent of the pain level since the difference of the total pain-rating index and the visual analog scale between chronic migraine and chronic tension-type headache was not statistically significant.

Monhemius, R., and B. A. Simpson. "Efficacy of spinal cord stimulation for neuropathic pain: assessment by abstinence." *European Journal of Pain: Ejp.* 7, no. 6(2003): 513-9 UI 14575664.

Assessment of the efficacy of spinal cord stimulation (SCS) against neuropathic pain remains problematic. Some patients may underestimate this, as revealed by their reaction to stimulator malfunction. This study investigated whether abstinence from SCS would provide an indication of its effectiveness. Patients were invited to complete two brief questionnaires each day for 50 days including two periods of 14 days without stimulation. Pain level, sleep quality, activity level and drug intake were recorded. Of 75 patients thought to be using their stimulators, 12 did not respond to the invitation, eight had unresolved technical problems and one no longer needed SCS. Of the 54 remaining, 10 did not wish to be without SCS and 15 declined without giving a reason. Thus 29 agreed to take part but three then dropped out through illness and questionnaires were not received from 10. Ten returned completed questionnaires but failed to follow the protocol; five of these were unable to leave their stimulators off. Only six took part correctly. Twenty of the 29 had received a preliminary explanatory home visit and for nine this was done by telephone. The former produced a considerably higher yield. All six who completed the study correctly had statistically significantly lower pain scores during stimulation. Four had improved sleep but only one reduced his medication and none of the six increased their activity levels. Correlation with previous clinical assessments is discussed. It is concluded that the abstinence principle might provide a useful tool but its power is very methodology-dependent.

Morganti, A. G., et al. "Pain relief with short-term irradiation in locally advanced carcinoma of the pancreas." *Journal of Palliative Care.* 19, no. 4(2003): 258-62 UI 14959596.

OBJECTIVES: To evaluate whether a short radiation treatment (30 Gy, 3.0 Gy/fraction) had analgesic efficacy in patients with unresectable pancreatic carcinoma. METHODS: Twelve patients were included in this analysis. Before starting and at four weeks after radiation therapy, pain intensity was evaluated and analgesic drug therapy was adjusted until a 0-3 pain score was reached (WHO). RESULTS: No radiotherapy interruptions, no hospitalisation due to toxic reactions, and no severe toxicity were observed. Six patients (50%) had pain control without pharmacological therapy, three patients (25%) reduced their use (35%-72%) of analgesics, while in the remaining three patients (25%) there was no change in analgesic use. Overall, mean reduction in the use of analgesics was 63.1% +/- 43.8%. During follow-up (44 months), two patients (16.7%) showed a worsening of pain that required increased analgesia; in one patient, percutaneous splanchnicectomy was necessary. CONCLUSION: In patients excluded from standard concomitant chemoradiation, hypofractionated-accelerated radiotherapy is feasible and results in pain relief in most patients, documented as a reduced need for analgesics.

Muller, I., et al. "Prevalence of clopidogrel non-responders among patients with stable angina pectoris scheduled for elective coronary stent placement." *Thrombosis & Haemostasis.* 89, no. 5(2003): 783-7 UI 12719773.

Dual antiplatelet therapy with aspirin and clopidogrel decreases the rate of stent thrombosis in patients undergoing percutaneous coronary intervention (PCI). However, despite intensified antiplatelet treatment, up to 4.7% of the patients

undergoing coronary stenting develop thrombotic stent occlusion, suggesting incomplete platelet inhibition due to clopidogrel resistance. We evaluated the percentage of clopidogrel non-responders among 105 patients with coronary artery disease (CAD) undergoing elective PCI. All patients were treated regularly with aspirin 100 mg/d and received a loading dose of 600 mg clopidogrel followed by a maintenance dose of 75 mg/d before PCI. Clopidogrel non-responders were defined by an inhibition of ADP (5 and 20 Mol/L) induced platelet aggregation that was less than 10% when compared to baseline values 4 h after clopidogrel intake. Semi-responders were identified by an inhibition of 10 to 29%. Patients with an inhibition over 30% were regarded as responders. We found that 5 (ADP 5 Mol/L) to 11% (ADP 20 Mol/L) of the patients were non-responders and 9 to 26% were semi-responders. Among the group of non-responders there were two incidents of subacute stent thrombosis after PCI. We conclude that a subgroup of patients undergoing PCI does not adequately respond to clopidogrel, which may correspond to the occurrence of thromboischemic complications. Point-of-care testing may help to identify these patients who may then benefit from an alternative antiplatelet therapy.

Nekoofar, M. H., M. Sadeghipanah, and A. R. Dehpour. "Evaluation of meloxicam (A cox-2 inhibitor) for management of postoperative endodontic pain: a double-blind placebo-controlled study." *Journal of Endodontics.* 29, no. 10(2003): 634-7 UI 14606784.

Successful management of endodontic pain represents a continuing challenge. The purpose of this randomized, double-blind, placebo-controlled, parallel-group trial was to compare the pain reducing effect of oral preparations of meloxicam, piroxicam, and placebo in endodontic emergency patients. A total of 51 patients who presented to the Tehran University endodontic clinic and one private dental clinic were invited to participate. Patients were asked to evaluate their pretreatment pain with a visual-analog scale. After root canal therapy they were randomly assigned to one of three groups: meloxicam, piroxicam, or placebo. Each patient was sent home with a visual-analog scale to fill out at 8 and 24 h after completion of therapy. The results of this study showed no significant differences between efficacy of meloxicam, piroxicam, and placebo, but a significant effect of the time factor in reducing postoperative pain in all treatment groups was observed.

Newton, E., and S. Mandavia. "Surgical complications of selected gastrointestinal emergencies: pitfalls in management of the acute abdomen." *Emergency Medicine Clinics of North America.* 21, no. 4(2003): 873-907, viii UI 14708812.

Complaints referable to the abdomen are common emergency department presentations. Many of these conditions prove to be benign and self-limited, whereas others are potentially catastrophic. Because serious and benign intra-abdominal conditions share many relatively nonspecific symptoms, it is often difficult to identify patients who have life-threatening problems early in the course of their disease. Apart from relieving the patient's symptoms, the emergency physician's primary role is to detect and stabilize life-threatening conditions in a rapid and cost-effective manner. [References: 96]

Nguyen, H., J. E. Garber, and S. J. Hassenbusch. "Spinal analgesics." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 805-16 UI 14719721.

The important issues to be emphasized when considering the intrathecal administration of novel analgesics are their proven antinociceptive effect, safety (short- and long-term effects on the spinal cord and potential toxicities), stability in shelf solution and at body temperature by itself, or in combination with other drugs in spinal fluid, compatibility with a long-term spinal infusion pump, whether they are of sufficiently high potency and solubility to be used in the finite volume of an implanted infusion pump, and if a pharmaceutical company is willing to invest the

immense resources needed for US Food and Drug Administration approval and subsequent commercial development. [References: 52]

Nowlan, C., and S. Wetmore. "Short report: ibuprofen versus glucosamine sulfate. Treating osteoarthritis pain." *Canadian Family Physician.* 49(2003): 1632-4 UI 14708929.

O'Leary, F. M., et al. "Fatal leptospirosis presenting as musculoskeletal chest pain." *Medical Journal of Australia.* 180, no. 1(2004): 29-31 UI 14709125.

After holidaying in Vanuatu, a 24-year-old man presented with pleuritic chest pain and chest wall tenderness thought to be musculoskeletal in origin. He developed fatal acute renal failure, jaundice, respiratory failure, myocarditis and rhabdomyolysis. Subsequent serological results showed a rise in serum titre of antibodies to Leptospira grippotyphosa, from 1 : 50 to 1 : 800, consistent with acute infection.

O'Leary, S., D. Falla, and G. Jull. "Recent advances in therapeutic exercise for the neck: implications for patients with head and neck pain." *Australian Endodontic Journal: the Journal of the Australian Society of Endodontology.* 29, no. 3(2003): 138-42 UI 14700399.

There have been recent advances in the rehabilitation of the muscles that control the head and neck. These advances are based on evidence of specific neck muscle dysfunction in individuals with persistent head and neck pain. Traditional rehabilitation strategies have focused predominantly on muscle strength and endurance under high loads. New evidence suggests that in people with neck pain there are underlying neuromuscular problems that may require more immediate attention and may not be adequately addressed by simple strength and high-load endurance retraining. Evidence of altered coordination between the deep and superficial neck muscles, greater neck muscle fatigue under sustained low loads, and deficits in kinaesthetic sense have been identified in symptomatic individuals. There is evidence to indicate that addressing these muscle control problems, with specific gentle exercise strategies, results in a reduction in neck pain and associated symptoms. [References: 64]

Onwude, J. L., et al. "A randomised trial of photographic reinforcement during postoperative counselling after diagnostic laparoscopy for pelvic pain." *European Journal of Obstetrics, Gynecology, & Reproductive Biology.* 112, no. 1(2004): 89-94 UI 14687747.

OBJECTIVE: To measure the effect of seeing a photograph of the pelvic findings at laparoscopy. SETTING: Two university teaching hospitals. METHOD: A randomised-controlled trial. SUBJECTS: Two hundred thirty-three women undergoing diagnostic laparoscopy for the investigation of chronic pelvic pain. INTERVENTIONS: At operation a Polaroid print was taken of the pelvis. If this was of satisfactory quality, the patient was randomly allocated to either see, or not see, the print during the postoperative consultation. MAIN OUTCOMES: Pain severity and pain belief scores at 3 and 6 months. ANALYSIS: By intention to treat. RESULTS: Postoperative consultations with photographs did not improve immediate understanding and satisfaction with the consultation. In addition, compared to controls, both patients and doctors did not perceive particular benefit for communication from the photograph. There was a consistent trend to more pain in the photographic reinforcement group and more negative pain beliefs. At 3 months, the average within person differences showed some benefit in visual analogue pain scores, McGill affect scores, 'permanence' and 'self-blame' scores. These benefits were not statistically significant. At 6 months, there was a consistent pattern of benefit from pain severity and pain beliefs, again these benefits were not statistically significant. CONCLUSION: No clear benefits result from showing patients photographs of their pelvis.

Papadopoulos, C. E., et al. "Preconditioning reduces QTc value in patients with first non-ST-segment elevation myocardial infarction (NSTEMI).[see comment]." *Annals of Noninvasive Electrocardiology.* 8, no. 4(2003): 275-83 UI 14516282.

BACKGROUND: Preinfarction angina (PA) consists a strong clinical correlate to ischemic preconditioning (PC) and seems to occur in a bimodal time course. The aim of the study is to evaluate the impact of both forms of PC on QTc value representing myocardial electric stability, in patients with a first NSTEMI. METHODS: Forty-eight patients, with first NSTEMI and poor or no collateral development were enrolled in the study. QTc at admission and discharge were recorded. All patients had comparable admission QTc values and were divided into three groups according to the absence or presence and exact timing of preinfarction angina. The first group consisted of 20 patients who did not report PA (PA-, representing no PC effect); the second group of 12 patients with reported PA within 12 hours prior to admission (12h PA+, representing the classic form of PC); and the third group of 16 patients reporting PA within 12 to 48 hours prior to admission (48-hour PA+, representing the delayed form of PC). The primary outcome was determined as the effect of PA on QTc value at discharge. RESULTS: Discharge QTc values were significantly reduced in both (PA+) groups compared to (PA-) group (412 +/- 50 vs. 455 +/- 53 ms, p = 0.015 and 417 +/- 29 vs. 455 +/- 53 ms, P = 0.033, respectively). Both groups of (PA+) patients compared to (PA-) patients suffered no arrhythmic events during their hospitalization (0/12 vs. 6/20, P = 0.04 and 0/16 vs. 6/20, P = 0.02). CONCLUSIONS: Both forms of preconditioning, similarly and significantly reduce QTc value at discharge in patients experiencing a first NSTEMI, suggesting possible protection from future arrhythmic events.

Pasero, C. "Pain in the critically ill patient." *Journal of Perianesthesia Nursing.* 18, no. 6(2003): 422-5 UI 14730527.

Podichetty, V. K., D. J. Mazanec, and R. S. Biscup. "Chronic non-malignant musculoskeletal pain in older adults: clinical issues and opioid intervention." *Postgraduate Medical Journal.* 79, no. 937(2003): 627-33 UI 14654573.

Musculoskeletal pain is common, frequently under-reported, and inadequately treated in the older adult. The objective of this article is to review the management of musculoskeletal pain syndromes in older adults emphasising the potential role of opioid agents in carefully selected patients. Systematic analysis of the relevant literature was done. Even in cognitively impaired patients, assessment of musculoskeletal pain is mandatory. An algorithm for musculoskeletal pain is presented emphasising a stepwise pharmacological approach in combination with an array of non-pharmacological therapies. Comorbid conditions may limit therapeutic choices, particularly in the elderly. Repeated assessment of pain levels as well as functional status is critical for optimal pain management. [References: 110]

Price, D. D., J. D. Greenspan, and R. Dubner. "Neurons involved in the exteroceptive function of pain." *Pain.* 106, no. 3(2003): 215-9 UI 14659504.

Puntillo, K., et al. "Accuracy of emergency nurses in assessment of patients' pain." *Pain Management Nursing.* 4, no. 4(2003): 171-5 UI 14663795.

Pain is a common complaint in Emergency Departments. Inpatient studies have shown discrepancies between patients' and nurses' pain assessments. The accuracy of emergency nurse assessments of their patients' pain has not been well investigated. Using a 0 to 10 numeric rating scale (NRS), researchers asked patients to rate their pain intensity in triage. Separately, the triage nurse was asked to rate the patient's pain. This process was repeated with the same patients but different nurses after patients were taken back to a clinical area within the Emergency Department. At triage, patients' average pain intensity score was 7.5 +/- 2.2. The

triage nurses' ratings were significantly lower at 5.1 +/- 2.4 (p <.001). In the clinical area, patients' scores were also significantly higher than nurses' at 7.7 +/- 2.2 and 4.2 +/- 2.3, respectively (p <.001). Differences between nurses' and patients' pain intensity scores depended on the patient's chief complaint. Considerable underestimation of patient's pain occurred in both triage and in the clinical area. Underestimation of patient's pain can have negative effects if appropriate treatment is withheld. Minimizing patient-nurse discrepancies in pain intensity ratings through careful evaluations and acceptance of the patient's self report of pain are important first steps in improving pain management in the Emergency Department.

Quraishi, N. A., et al. "Correlation of nerve root pain with dermatomal sensory threshold and back pain with spinal movement in single level lumbar spondylosis." *Journal of Bone & Joint Surgery - British Volume.* 86, no. 1(2004): 74-80 UI 14765870.

We studied 27 patients with low back pain and unilateral L5 or S1 spinal nerve root pain. Significant radiological changes were restricted to the symptomatic root level, when compared with controls. Low back and leg pain were graded on a visual analogue scale. Dermatomal quantitative sensory tests revealed significant elevations of warm, cool and touch perception thresholds in the affected dermatome, compared with controls. These elevations correlated with root pain (warm v L5 root pain; r = 0.88, p < 0.0001), but not with back pain. Low back pain correlated with restriction of anteroposterior spinal flexion (p = 0.02), but not with leg pain. A subset of 16 patients underwent decompressive surgery with improvement of pain scores, sensory thresholds and spinal mobility. A further 14 patients with back pain, multilevel nerve root symptoms and radiological changes were also studied. The only correlation found was of low back pain with spinal movement (p < 0.002). We conclude that, in patients with single level disease, dermatomal sensory threshold elevation and restriction of spinal movement are independent correlates of sciatica and low back pain.

Raj, P. P. "Botulinum toxin therapy in pain management." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 715-31 UI 14719715.

BTs seem to be a useful treatment in refractory MPS and headache. Presumably BTs work by breaking the spasm or pain cycle giving the patient a "window of opportunity" for traditional conservative measures to have a greater beneficial impact, but several studies suggest that a direct antinociceptive effect distinct from any reduction in muscle spasm may be at play. The major benefit of BTs compared with standard therapies is duration of response. We do not advocate that BTs be used as a first line treatment for MPS or headache. However, in refractory cases where nothing else has worked, it may offer a chance for improvement or cure not otherwise available. For now, it remains an off label, but increasingly accepted, approach in-patients with refractory myofascial pain and headache, who despite multidisciplinary approaches, continue to suffer. [References: 86]

Rosenthal, K. "Implantable pumps deliver innovative pain management." *Nursing Management.* 34, no. 12(2003): 46-9 UI 14668685.

Implantable pump technology carries numerous patient care benefits.

Rucklidge, M. W., S. M. Yentis, and M. J. Paech. "Synacthen Depot for the treatment of postdural puncture headache." *Anaesthesia.* 59, no. 2(2004): 138-41 UI 14725516.

We conducted a prospective, randomised, double-blind trial to study the effect of Synacthen Depot in 18 parturients with postdural puncture headache following deliberate or accidental dural puncture. Women were randomly allocated to receive either Synacthen Depot 1 mg (1 ml) or 0.9% saline 1 ml intramuscularly. Using a 10-cm visual analogue scale, severity of headache was measured before and at

intervals until 48 h after injection. There was no difference in the severity of headache or requirement for epidural blood patch. We conclude that there is no advantage to the use of Synacthen Depot 1 mg for the treatment of postdural puncture headache.

Russell, A., et al. "Evaluation of dosing guidelines for use of controlled-release codeine in chronic noncancer pain." *Pain Research & Management.* 8, no. 3(2003): 143-8 UI 14657981.

OBJECTIVE: The clinical utility of guidelines for conversion of patients from a combination analgesic preparation of acetaminophen 300 mg plus codeine 30 mg every 4h to 6h as needed to scheduled controlled-release (CR) codeine every 12h was evaluated. METHODS: Adult patients with chronic noncancer pain underwent a two-week evaluation on acetaminophen plus codeine, followed by eight weeks of treatment with CR codeine. Patients taking four to six tablets of acetaminophen plus codeine per day were transferred to 50 mg CR codeine every 12 h; those on seven to nine tablets were transferred to 100 mg every 12 h; those on 10 to 12 tablets were transferred to 150 mg every 12 h; and those on greater than 12 tablets were transferred to 200 mg every 12 h. Subsequent dose adjustments were permitted. Acetaminophen (325 mg) was available for rescue. Pain intensity (five-point categorical and 100 mm visual analog scale), pain related disability, adverse events and acceptability were assessed. RESULTS: Of the 140 patients enrolled, 95 completed eight weeks of treatment with CR codeine. During month 1 and month 2, the mean CR codeine daily doses were 295.7+/-119.1 mg and 390.3+/-163.4 mg, respectively. Pain scores during both CR codeine month 1 and 2 were significantly lower than on acetaminophen plus codeine (53.6+/-20.9 mm and 49.7+/-23.7 mm versus 59.6+/-17.5 mm; P=0.0003, P=0.0001, respectively). CR codeine treatment was rated as moderately or highly acceptable by 82% of patients compared with 50% for acetaminophen plus codeine (P=0.001). Only seven patients (5.9%) discontinued CR codeine treatment because of adverse events. CONCLUSION: The results confirm the safety, efficacy and patient acceptability of the initial conversion and maintenance dosing recommendations for CR codeine from a combination opioid/nonopioid analgesic.

Santini, S., et al. "Percutaneous drilling for chronic heel pain." *Journal of Foot & Ankle Surgery.* 42, no. 5(2003): 296-301 UI 14566722.

The authors report a retrospective study involving 25 feet in 21 patients who underwent percutaneous drilling for chronic heel pain. Patients with increased activity of the heel were considered for surgical treatment if there was increased uptake on the delayed bone scans. The average follow-up was 21 months (range, 6 to 30 months). All patients were treated in day surgery with local anesthesia. Three small holes were bored in the medial cortex of the calcaneus. Clinical evaluation of the parameters of pain, walking distance, fascial tenderness, paresthesias, and ankle and subtalar joint motion were evaluated preoperatively and at final follow-up. In 7 patients, repeat bone scans were performed and 6 patients had resolution of the abnormal uptake. In 81% of feet treated, there was a favorable outcome based on a subjective scoring scale. Using a visual analog pain scale, the preoperative pain level was 8.8 (range, 4 to 10), and at latest follow-up, it was 2.4 (range, 0 to 10). These results are comparable to other available surgical methods for the treatment of recalcitrant heel pain. Less predictable results were seen in patients with rheumatic and systemic pathologies and in those diagnosed with Haglund deformity. This technique appears to be effective in the relief of intraosseous congestion and bone-marrow edema.

Scholl, B. M., et al. "Vertebral osteonecrosis related to intradiscal electrothermal therapy: a case report." *Spine.* 28, no. 9(2003): E161-4 UI 12942018.

STUDY DESIGN: A case of a patient in whom vertebral osteonecrosis developed after intradiscal electrothermal therapy is reported. OBJECTIVE: To illustrate a potential complication of intradiscal electrothermal therapy and potential strategies to avoid it. SUMMARY OF BACKGROUND DATA: Thermal energy delivered in a controlled fashion directly to the annular wall and disc nucleus has been developed as an alternative to surgical methods for treating internal disc disruption. Although 2-year follow-up data are available, few complications and no vertebral body injury have been reported. METHODS: After intradiscal electrothermal therapy, a patient exhibited MRI changes consistent with osteonecrosis in the adjacent vertebral body. The clinical and radiologic findings are presented, along with a review of the pertinent literature. RESULTS: The magnetic resonance images, the temporal relation of intradiscal therapy, and the patient's clinical symptoms are consistent with focal osteonecrosis of the vertebral body. CONCLUSIONS: This case study highlights a potential complication of intradiscal electrothermal therapy. Catheter placement may expose cortical and cancellous bone to temperatures well within the range reported to induce necrosis. In addition, focal disruption of the endplate may prove to be a relative contraindication for intradiscal electrothermal therapy.

Senard, M., et al. "Epidural levobupivacaine 0.1% or ropivacaine 0.1% combined with morphine provides comparable analgesia after abdominal surgery." *Anesthesia & Analgesia.* 98, no. 2(2004): 389-94, table of contents UI 14742376.

Ropivacaine appears attractive for epidural analgesia because it produces less motor block than racemic bupivacaine. The potential benefits of levobupivacaine with regard to motor blockade require further investigations. In this study, we compared the efficacy, dose requirements, side effects, and motor block observed with epidural levobupivacaine and ropivacaine when given in combination with small-dose morphine for 60 h after major abdominal surgery. Postoperatively, 50 patients were randomly allocated, in a double-blinded manner, to patient-controlled epidural analgesia with the same settings and without basal infusion, using 0.1% levobupivacaine or 0.1% ropivacaine. Both were combined with an epidural infusion of 0.1 mg/h morphine. Pain scores, side effects, motor block, and local anesthetic consumption were measured for 60 h. Pain scores measured on a 100-mm visual analog scale were approximately 20 mm at rest and 40 mm during mobilization in both groups. Bromage scores were 1 for all patients after the fourth postoperative hour. Consumption of levobupivacaine and ropivacaine were similar: 344 +/- 178 mg levobupivacaine versus 347 +/- 199 mg ropivacaine 48 h postoperatively. On postoperative day 2, 19 patients in the ropivacaine group versus 12 in the levobupivacaine group were able to ambulate ($P < 0.05$). No difference was noted concerning incidence of side effects. We conclude that when used as patient-controlled epidural analgesia and combined with small-dose epidural morphine, 0.1% levobupivacaine and 0.1% ropivacaine produce comparable postoperative analgesia with a similar incidence of side effects. IMPLICATIONS: Small concentrations (0.1%) of epidural levobupivacaine and ropivacaine combined with morphine (0.1 mg/h) produce comparable analgesia and have similar side effects for similar dose requirements.

Shapiro, A., et al. "A comparison of three techniques for acute postoperative pain control following major abdominal surgery." *Journal of Clinical Anesthesia.* 15, no. 5(2003): 345-50 UI 14507559.

STUDY OBJECTIVES: To compare the analgesic efficacy of a nonsteroidal antiinflammatory drug (NSAID) alone (basic pain treatment) with that of NSAID in conjunction with either intravenous (IV) patient-controlled analgesia (IV-PCA) or intermittent epidural morphine (epidural morphine), among patients recovering from major intraabdominal surgery; and to assess the fixed and variable costs of providing the respective acute pain treatment modalities. DESIGN: Prospective, nonrandomized study. SETTING: Postanesthesia care unit (PACU) and surgical

departments of a large referral hospital. PATIENTS: All patients (n = 358) treated by our Acute Pain Service (APS) who were recovering from major intraabdominal surgery (colectomy, cholecystectomy, colostomy, gastrectomy, splenectomy). MEASUREMENTS AND MAIN RESULTS: The structure of our APS, analgesic regimens, and the associated patient monitoring and event-response algorithms are detailed. Data of 358 patients recovering from major intraabdominal surgery and treated according to one of the three treatment protocols were collected and analyzed. The cost of providing our APS and the nursing time required to monitor and treat patients in each treatment group were also calculated. The median visual analog scale (VAS) scores were low in all three treatment groups (23.5 mm vs. 6 mm vs. 4, for the basic pain treatment, IV-PCA, and epidural morphine groups, respectively). However, the median VAS was significantly ($p < 0.04$) lower among patients who received epidural morphine than either the IV-PCA or basic pain treatment groups. Similarly, the number of patients who had at least one episode of a pain VAS >30 mm was significantly ($p < 0.04$) lower in the epidural morphine group than either of the other two groups. The frequency of nausea and vomiting was similar among the groups. However, the frequency of postoperative pruritus was significantly ($p < 0.001$) higher in the epidural morphine group than the other two groups. Patient satisfaction was unaffected by group allocation. Institutional costs per patient and the nursing time required to provide the APS were lowest in the basic pain treatment group. CONCLUSIONS: Considering the respective pain profiles, complication rates, and institutional costs associated with the three analgesic regimens analyzed, the basic pain Treatment alone constitutes a useful alternative to the other two analgesic regimens assessed.

Shibasaki Warabi, Y., et al. "Triphasic waves detected during recovery from lithium intoxication." *Internal Medicine.* 42, no. 9(2003): 908-9 UI 14518689.

Silberstein, E. B., A. T. Taylor, Jr., and Eanm. "EANM procedure guidelines for treatment of refractory metastatic bone pain." *European Journal of Nuclear Medicine & Molecular Imaging.* 30, no. 3(2003): BP7-11 UI 12723557.

Silvestri, A., et al. "Report of erectile dysfunction after therapy with beta-blockers is related to patient knowledge of side effects and is reversed by placebo." *European Heart Journal.* 24, no. 21(2003): 1928-32 UI 14585251.

AIMS: Patients with cardiovascular diseases frequently complain of erectile dysfunction especially when treated with beta-blockers. In order to assess whether the effect of beta-blockers on erectile dysfunction is in part related to patient knowledge of the drug side effects, 96 patients (all males, age 52+/-7 years) with newly diagnosed cardiovascular disease and not suffering from erectile dysfunction entered a two phase, single cross over study. METHODS AND RESULTS: During the first phase of the study patients received atenolol 50mg o.d. (A), 32 patients were blinded on the drug given (group A), 32 were informed on the drug given but not on its side effects (group B) and 32 took A after being informed on its side effects on erectile function (group C). After 3 months the incidence of erectile dysfunction was 3.1% in the group A, 15.6% in group B and 31.2% in group C ($P<0.01$). All patients reporting ED entered the second phase of the study and were randomised to receive Sildenafil 50mg and placebo in a cross over study. Sildenafil citrate and placebo were equally effective in reversing erectile dysfunction in all but one patient reporting ED with Atenolol. CONCLUSION: Our results show that the knowledge and prejudice about side effects of beta-blockers can produce anxiety, that may cause erectile function.

Slaven, E. M., et al. "The AIDS patient with abdominal pain: a new challenge for the emergency physician." *Emergency Medicine Clinics of North America.* 21, no. 4(2003): 987-1015 UI 14708816.

As the prevalence of HIV infection continues to increase, EPs will be called upon to evaluate increasing numbers of AIDS patients who have abdominal pain, some of whom will require emergent surgical intervention. In addition to the myriad causes of abdominal pain in the nonimmunocompromised patient, the differential diagnosis in the AIDS patient includes a wide variety of opportunistic infections and neoplasms (Table 5). Evaluation frequently requires extensive laboratory studies and cultures and advanced imaging (CT, ultrasound, and so forth). A low threshold for surgical and other subspecialty consultation should be in place because of the often subtle presentation of surgical emergencies in AIDS patients. [References: 99]

Staal, J. B., et al. "Graded activity for low back pain in occupational health care: a randomized, controlled trial.[see comment]." *Annals of Internal Medicine.* 140, no. 2(2004): 77-84 UI 14734329.

BACKGROUND: Low back pain is a common medical and social problem frequently associated with disability and absence from work. However, data on effective return to work after interventions for low back pain are scarce. OBJECTIVE: To determine the effectiveness of a behavior-oriented graded activity program compared with usual care. DESIGN: Randomized, controlled trial. SETTING: Occupational health services department of an airline company in the Netherlands. PATIENTS: 134 workers who were absent from work because of low back pain were randomly assigned to either graded activity (n = 67) or usual care (n = 67). INTERVENTION: Graded activity, a physical exercise program based on operant-conditioning behavioral principles, to stimulate a rapid return to work. MEASUREMENTS: Outcomes were the number of days of absence from work because of low back pain, functional status (Roland Disability Questionnaire), and severity of pain (11-point numerical scale). RESULTS: The median number of days of absence from work over 6 months of follow-up was 58 days in the graded activity group and 87 days in the usual care group. From randomization onward, graded activity was effective after 50 days of absence from work (hazard ratio, 1.9 [95% CI, 1.2 to 3.2]; P = 0.009). The graded activity group was more effective in improving functional status and pain than the usual care group. The effects, however, were small and not statistically significant. CONCLUSIONS: Graded activity was more effective than usual care in reducing the number of days of absence from work because of low back pain.

Sterling, M., et al. "Characterization of acute whiplash-associated disorders." *Spine.* 29, no. 2(2004): 182-8 UI 14722412.

STUDY DESIGN: An experimental study of motor and sensory function and psychological distress in subjects with acute whiplash injury. OBJECTIVES: To characterize acute whiplash injury in terms of motor and sensory systems dysfunction and psychological distress and to compare subjects with higher and lesser levels of pain and disability. SUMMARY OF BACKGROUND DATA: Motor system dysfunction, sensory hypersensitivity, and psychological distress are present in chronic whiplash associated disorders (WAD), but little is known of such factors in the acute stage of injury. As higher levels of pain and disability in acute WAD are accepted as signs of poor outcome, further characterization of this group from those with lesser symptoms is important. MATERIALS AND METHODS: Motor function (cervical range of movement [ROM], joint position error [JPE]; activity of the superficial neck flexors [EMG] during a test of cranio-cervical flexion), quantitative sensory testing (pressure, thermal pain thresholds, and responses to the brachial plexus provocation test), and psychological distress (GHQ-28, TAMPA, IES) were measured in 80 whiplash subjects (WAD II or III) within 1 month of injury, as were 20 control subjects. RESULTS: Three subgroups were identified in the cohort using cluster analysis based on the Neck Disability Index: those with mild, moderate, or severe pain and disability. All whiplash groups demonstrated decreased ROM and increased EMG compared with the controls (all P < 0.01). Only the moderate and

severe groups demonstrated greater JPE and generalized hypersensitivity to all sensory tests (all P < 0.01). The three whiplash subgroups demonstrated evidence of psychological distress, although this was greater in the moderate and severe groups. Measures of psychological distress did not impact on between group differences in motor or sensory tests. CONCLUSIONS: Acute whiplash subjects with higher levels of pain and disability were distinguished by sensory hypersensitivity to a variety of stimuli, suggestive of central nervous system sensitization occurring soon after injury. These responses occurred independently of psychological distress. These findings may be important for the differential diagnosis of acute whiplash injury and could be one reason why those with higher initial pain and disability demonstrate a poorer outcome.

Sterling, M., et al. "The development of psychological changes following whiplash injury." *Pain.* 106, no. 3(2003): 481-9 UI 14659532.

Psychological distress is a feature of chronic whiplash-associated disorders, but little is known of psychological changes from soon after injury to either recovery or symptom persistence. This study prospectively measured psychological distress (General Health Questionnaire 28, GHQ-28), fear of movement/re-injury (TAMPA Scale of Kinesphobia, TSK), acute post-traumatic stress (Impact of Events Scale, IES) and general health and well being (Short Form 36, SF-36) in 76 whiplash subjects within 1 month of injury and then 2, 3 and 6 months post-injury. Subjects were classified at 6 months post-injury using scores on the Neck Disability Index: recovered (<8), mild pain and disability (10-28) or moderate/severe pain and disability (>30). All whiplash groups demonstrated psychological distress (GHQ-28, SF-36) to some extent at 1 month post-injury. Scores of the recovered group and those with persistent mild symptoms returned to levels regarded as normal by 2 months post-injury, parallelling a decrease in reported pain and disability. Scores on both these tests remained above threshold levels in those with ongoing moderate/severe symptoms. The moderate/severe and mild groups showed elevated TSK scores at 1 month post-injury. TSK scores decreased by 2 months in the group with residual mild symptoms and by 6 months in those with persistent moderate/severe symptoms. Elevated IES scores, indicative of a moderate post-traumatic stress reaction, were unique to the group with moderate/severe symptoms. The results of this study demonstrated that all those experiencing whiplash injury display initial psychological distress that decreased in those whose symptoms subside. Whiplash participants who reported persistent moderate/severe symptoms at 6 months continue to be psychologically distressed and are also characterised by a moderate post-traumatic stress reaction.

Stohler, C. "Explanations change, therapies remain the same for the time being." *Journal of Orofacial Pain.* 17, no. 4(2003): 287 UI 14737871.

Strong, J., et al. "Does participation in a pain course based on the International Association for the Study of Pain's curricula guidelines change student knowledge about pain?" *Pain Research & Management.* 8, no. 3(2003): 137-42 UI 14657980.

BACKGROUND: The People in Pain course was set up as a joint initiative of the Departments of Occupational Therapy and Physiotherapy within the School of Health and Rehabilitation Sciences at The University of Queensland. It was instigated in response to the publication of Pain Curricula for Occupational Therapy and Physiotherapy by the International Association for the Study of Pain (IASP) in 1994 (1). The first year it was offered, the "People in Pain" course comprised 14 h of lecture content. It was then expanded to encompass 28 h of lectures and seminar involvement. OBJECTIVES: To evaluate the impact of participation in a university pain course that meets the IASP pain curricula guidelines to increase health professional students' knowledge about pain. METHODS: Students who participated in the People in Pain course over the first three years were invited to complete the

Revised Pain Knowledge and Attitudes Questionnaire (R-PKAQ) pre- and postcourse. Data obtained from 22 students in the short course formed a pilot project, and data from 22 students in the longer version of the course were used in the present study. RESULTS: Examination of the correlation matrix indicated substantial correlations between all R-PKAQ subscales except physiological basis of pain and pharmacological management of pain. In both the pilot project during the first year of the course and the expanded course in the following two years, significant improvement was found in the students' knowledge on five of the six subscales of the R-PKAQ: physiological basis of pain, psychological factors of pain perception, assessment and measurement of pain, cognitive-behavioural methods of pain relief, and pharmacological management of pain. Improvements in the developmental aspects of pain perception subscale failed to reach significance. CONCLUSIONS: An integrated pain course developed according to the pain curriculum guidelines developed by the IASP resulted in increased student knowledge regardless of the length of the program attended.

Sze, W. M., et al. "Palliation of metastatic bone pain: single fraction versus multifraction radiotherapy--a systematic review of randomised trials.[see comment]." *Clinical Oncology (Royal College of Radiologists).* 15, no. 6(2003): 345-52 UI 14524489.

Recent randomised studies have reported that single fraction radiotherapy is as effective as multifraction radiotherapy in relieving pain caused by bone metastasis. However, there are concerns about the higher re-treatment rates and the efficacy of preventing future complications, such as pathological fracture and spinal cord compression, by single fraction radiotherapy. A systematic review of randomised studies, examining the effectiveness of single fraction radiotherapy versus multiple fraction radiotherapy for metastatic bone pain relief and prevention of bone complications, was conducted to help answer this controversy. Randomised studies comparing single fraction radiotherapy with multifraction radiotherapy on metastatic bone pain were identified. The analyses were performed using intention-to-treat principle. The results were pooled using meta-analysis to estimate the effect of treatment on pain response, re-treatment rate, pathological fracture rate and spinal cord compression rate. Twelve trials involving 3621 sites were included in the meta-analysis. The overall pain-response rates for single fraction radiotherapy and multifraction radiotherapy were 60% (1080/1814) and 59% (1060/1807), respectively, giving an odds ratio (OR) of 1.03 (95% confidence interval [CI] 0.90-1.19), indicating no difference between the two radiotherapy schedules. There was also no difference in complete pain response rates for single fraction radiotherapy (34% [508/1476]) and multifraction radiotherapy (32% [475/1473]), with an OR of 1.10 (950% CI 0.94-1.30). Patients treated by single fraction radiotherapy had a higher re-treatment rate, with 21.5% (267/1240) requiring re-treatment compared with 7.4% (91/1236) of patients in the multifraction radiotherapy arm (OR 3.44 [95% CI 2.67-4.43]). The pathological fracture rate was also higher in single fraction radiotherapy arm patients. Three per cent (37/1240) of patients treated by single fraction radiotherapy developed pathological fracture compared with 1.6% (20/1236) for those treated by multifraction radiotherapy (OR 1.82 [95% CI 1.06-3.11]). The spinal cord compression rates were similar for both arms (OR 1.41 [95% CI 0.72-2.75]). Single fraction radiotherapy was as effective as multifraction radiotherapy in relieving metastatic bone pain. However, the re-treatment rate and pathological fracture rate were higher after single fraction radiotherapy. Studies with quality of life and health economic end points are warranted to find out the optimal treatment option. [References: 65]

Takahashi, M., et al. "The oral-to-intravenous equianalgesic ratio of morphine based on plasma concentrations of morphine and metabolites in advanced cancer patients

receiving chronic morphine treatment." *Palliative Medicine.* 17, no. 8(2003): 673-8 UI 14694918.

To provide additional pharmacokinetic evidence for the oral-to-parenteral relative potency ratio of 1:2 to 1:3 for chronic morphine use in a palliative care setting, we determined the plasma concentrations of morphine and its major metabolites, morphine-3-glucuronide (M3G) and morphine-6-glucuronide (M6G), in hospitalized advanced cancer patients maintained on long-term oral or intravenous morphine. There were significant linear correlations between daily doses of morphine and plasma concentrations (molar base) of morphine, M3G and M6G for both routes of administration. The oral-to-intravenous relative ratios of the regression coefficients were 2.9 for morphine and 1.8 for morphine + M6G. The morphine kinetic variables were not significantly influenced by any hepato-renal biochemical markers. These results support the commonly used oral-to-intravenous relative potency ratio of 1:2 to 1:3 in patients with cancer pain receiving chronic morphine treatment.

Tamayo-Sarver, J. H., et al. "The effect of race/ethnicity and desirable social characteristics on physicians' decisions to prescribe opioid analgesics." *Academic Emergency Medicine.* 10, no. 11(2003): 1239-48 UI 14597500.

OBJECTIVE: Racial/ethnic disparities in physician treatment have been documented in multiple areas, including emergency department (ED) analgesia. The purpose of this study was to determine if physicians were predisposed to different treatment decisions based on patient race/ethnicity and if physicians' treatment predispositions changed when socially desirable information about the patient (occupation, socioeconomic status, and relationship with a primary care physician) was made explicit. METHODS: The authors developed three clinical vignettes designed to engage physicians' decision-making processes. The patient's race/ethnicity was included. Each vignette randomly included or omitted explicit socially desirable information. The authors mailed 5,750 practicing emergency physicians three clinical vignettes and a one-page questionnaire about demographic and practice characteristics. Chi-square tests of significance for bivariate analyses and multiple logistic regression were used for multivariate analyses. RESULTS: A total of 2,872 (53%) of the 5,398 potential physician subjects participated. Patient race/ethnicity had no effect on physician prescription of opioids at discharge for African Americans, Hispanics, and whites: absolute differences in rates of prescribing opioids at discharge were less than 2% for all three conditions presented. Making socially desirable information explicit increased the prescribing rates by 4% (95% CI = 0.1% to 8%) for the migraine vignette and 6% (95% CI = 3% to 8%) for the back pain vignette. CONCLUSIONS: Patient race/ethnicity did not influence physicians' predispositions to treatment plans in clinical vignettes. Even knowing that the patient had a high-prestige occupation and a primary care provider only minimally increased prescribing of opioid analgesics for conditions with few objective findings.

Tomoda, H., and N. Aoki. "Coronary blood flow in evolving myocardial infarction preceded by preinfarction angina: a critical reevaluation of preconditioning effects in clinical cases." *Angiology.* 55, no. 1(2004): 9-15 UI 14759084.

This study was undertaken to reevaluate the protective effects of preinfarction (pre-MI) angina in acute MI. The mechanisms involved in the apparent protective effects of pre-MI angina have been presumed to be preconditioning effects as defined by experimental studies. The phenomenon, has not, however, been observed in diabetic and/or elderly patients or in those treated by primary percutaneous coronary intervention (PCI). A total of 202 patients with anterior wall MI without a history of MI who underwent primary PCI with coronary balloon dilation and stenting (rate: 50%) <6 hours after onset were studied. Patients included 59 with pre-MI angina (group 1) and 143 without pre-MI angina (group 2). The infarct-related coronary artery was patent on admission in 46% of group 1 and 31% of group 2 (p=0.045). Thrombolysis in Myocardial Infarction (TIMI) 1-2 flow was significantly

more frequent in group 1 (29%) than in group 2 (11%, p=0.005) on admission. Among risk factors, clinical background, coronary anatomy, and clinical outcome, the only significant predictor of pre-MI angina was a patent infarct-related coronary artery on admission (odds ratio: 2.39, p = 0.015). There was no significant difference in left ventricular ejection fraction, peak creatine kinase, or the incidences of heart failure and in-hospital/follow-up deaths between these groups. In conclusion, the findings suggest that the protective effects reported in MI with pre-MI angina treated by thrombolysis are due to more fragile thrombotic occlusion, which can be more easily recanalized by thrombolysis, whereas the beneficial effects are not evident in those treated by primary PCI.

Trehan, V., et al. "Stenting of a septal perforator for post-myocardial infarction angina." *Indian Heart Journal.* 55, no. 4(2003): 368-9 UI 14686669.

Occlusion of a septal perforator branch alone, without the involvement of the left anterior descending coronary artery, leading to acute myocardial infarction is unusual. We report a case in which an isolated severely stenotic thrombus-containing first septal artery causing intractable post-myocardial infarction angina was successfully dilated and stented.

Turk, D. C., et al. "Core outcome domains for chronic pain clinical trials: IMMPACT recommendations." *Pain.* 106, no. 3(2003): 337-45 UI 14659516.

OBJECTIVE: To provide recommendations for the core outcome domains that should be considered by investigators conducting clinical trials of the efficacy and effectiveness of treatments for chronic pain. Development of a core set of outcome domains would facilitate comparison and pooling of data, encourage more complete reporting of outcomes, simplify the preparation and review of research proposals and manuscripts, and allow clinicians to make informed decisions regarding the risks and benefits of treatment. METHODS: Under the auspices of the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT), 27 specialists from academia, governmental agencies, and the pharmaceutical industry participated in a consensus meeting and identified core outcome domains that should be considered in clinical trials of treatments for chronic pain. CONCLUSIONS: There was a consensus that chronic pain clinical trials should assess outcomes representing six core domains: (1) pain, (2) physical functioning, (3) emotional functioning, (4) participant ratings of improvement and satisfaction with treatment, (5) symptoms and adverse events, (6) participant disposition (e.g. adherence to the treatment regimen and reasons for premature withdrawal from the trial). Although consideration should be given to the assessment of each of these domains, there may be exceptions to the general recommendation to include all of these domains in chronic pain trials. When this occurs, the rationale for not including domains should be provided. It is not the intention of these recommendations that assessment of the core domains should be considered a requirement for approval of product applications by regulatory agencies or that a treatment must demonstrate statistically significant effects for all of the relevant core domains to establish evidence of its efficacy. [References: 35]

Usichenko, T. I., et al. "Reducing venipuncture pain by a cough trick: a randomized crossover volunteer study." *Anesthesia & Analgesia.* 98, no. 2(2004): 343-5, table of contents UI 14742367.

We tested the effectiveness of the cough trick (CT) as a method of pain relief during peripheral venipuncture (VP) in a crossover study. Twenty healthy volunteers were punctured twice in the same hand vein within an interval of 3 wk, once with the CT procedure and once without it. The intensity of pain, hand withdrawal, palm sweating, blood pressure, heart rate, and serum glucose concentration were recorded. The intensity of pain during VP with the CT procedure was less than without it, whereas the other variables changed insignificantly. The easily performed

CT was effective in pain reduction during VP, although the mechanism remains unclear. IMPLICATIONS: The effectiveness of a cough trick for pain reduction during peripheral venipuncture was tested in a volunteer study in which each subject served as his own control. The easily performed cough-trick procedure was effective for pain reduction, although the mechanism remains unclear.

Van Den Kerkhof, E. G., et al. "The impact of sampling and measurement on the prevalence of self-reported pain in Canada." *Pain Research & Management.* 8, no. 3(2003): 157-63 UI 14657983.

BACKGROUND: Pain is an important public health problem in Canada. International estimates of general population pain prevalence range from 2% to 46%. OBJECTIVES: The purpose of this paper is to critically examine the potentially misleading use of overall prevalence estimates in the pain literature and to use two Canadian population-based surveys to assess the impact of sampling and measurement on prevalence. METHODS: Two of the secondary data sets used were the 1996/97 National Population and Health Survey (NPHS) and the Canadian Multicentre Osteoporosis Study (CaMos). This paper is based on the assessment of chronic pain in the NPHS, and the assessment of short term pain using the Medical Outcomes Trust's 36-item health survey and the Health Utilities Index, both collected by CaMos. Data are presented as frequencies and percentages overall and stratified by age and sex. CaMos prevalence estimates were age- and sex-standardized to the NPHS population. RESULTS: The overall prevalence of pain was 39% for one-week pain, 66% for four-week pain and 15% for chronic pain. Women were more likely to report pain than men and the prevalence of pain increased with age. CONCLUSIONS: This study yields useful information about the self-reported responses to a variety of questions assessing pain in the general population. Responses to the different questions likely represent different categories of pain, such as short term versus chronic pain, which in turn may have different epidemiological risk factors and profiles. Longitudinal studies of the epidemiology, predictors and natural history of chronic pain are urgently needed in the Canadian population.

Vasudevan, S. V., E. E. Potts, and C. Mehrotra. "Pain management in arthritis: evidence-based guidelines." *Wmj.* 102, no. 7(2003): 14-8 UI 14711018.

Venkat, A., et al. "The impact of race on the acute management of chest pain." *Academic Emergency Medicine.* 10, no. 11(2003): 1199-208 UI 14597496.

OBJECTIVES: African Americans with acute coronary syndromes receive cardiac catheterization less frequently than whites. The objective was to determine if such disparities extend to acute evaluation and non interventional treatment. METHODS: Data on adults with chest pain (N = 7,935) presenting to eight emergency departments (EDs) were evaluated from the Internet Tracking Registry of Acute Coronary Syndromes. Groups were selected from final ED diagnosis: 1) acute myocardial infarction (AMI), n = 400; 2) unstable angina/non-ST-elevation myocardial infarction (UA/NSTEMI), n = 1,153; and 3) nonacute coronary syndrome chest pain (non-ACS CP), n = 6,382. American College of Cardiology/American Heart Association guidelines for AMI and UA/NSTEMI were used to evaluate racial disparities with logistic regression models. Odds ratios (ORs) were adjusted for age, gender, guideline publication, and insurance status. Non-ACS CP patients were assessed by comparing electrocardiographic (ECG)/laboratory evaluation, medical treatment, admission rates, and invasive and noninvasive testing for coronary artery disease (CAD). RESULTS: African Americans with UA/NSTEMI received glycoprotein IIb/IIIa receptor inhibitors less often than whites (OR, 0.41; 95% CI = 0.19 to 0.91). African Americans with non-ACS CP underwent ECG/laboratory evaluation, medical treatment, and invasive and noninvasive testing for CAD less often than whites ($p < 0.05$). Other nonwhites with non-ACS CP were admitted and received invasive testing for CAD less often than whites ($p < 0.01$). African Americans and

other nonwhites with AMI underwent catheterization less frequently than whites (OR, 0.45; 95% CI = 0.29 to 0.71 and OR, 0.40; 95% CI = 0.17 to 0.92, respectively). A similar disparity in catheterization was noted in UA/NSTEMI therapy (OR, 0.53; 95% CI = 0.40 to 0.68 and OR, 0.68; 95% CI = 0.47 to 0.99). CONCLUSIONS: Racial disparities in acute chest pain management extend beyond cardiac catheterization. Poor compliance with recommended treatments for ACS may be an explanation.

Viesca, C. O., G. B. Racz, and M. R. Day. "Special techniques in pain management: lysis of adhesions." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 745-66, vi UI 14719717.

Low back pain, with or without radicular symptoms, is a common medical condition. It can cause mild to severe suffering, high health costs, and disability. Most sufferers recover quickly and are left without sequelae. The less fortunate group of patients who do not improve despite conservative and mildly interventional therapy, find themselves in search of a more effective treatment. To enhance treatment outcome, an understanding of the pathophysiology of the underlying pain and the design of target-specific treatment modalities is important. [References: 23]

Vojkovic, S. J., and L. J. Kristjanson. "Case study report of two palliative care patients receiving intracerebroventricular (ICV) analgesia." *Journal of Palliative Care.* 19, no. 4(2003): 280-3 UI 14959600.

Waddell, D. D. "The tolerability of viscosupplementation: low incidence and clinical management of local adverse events." *Current Medical Research & Opinion.* 19, no. 7(2003): 575-80 UI 14626291.

Hylan G-F 20 (Synvisc, Genzyme Biosurgery, Ridgefield, NJ) is a visco supplement indicated for the treatment of pain due to osteoarthritis (OA) of the knee. Overall, the therapy is well tolerated with a low incidence of local and systemic adverse events (AEs). In our large clinical practice, our overall rate of local pain and swelling with treatment is consistent with that of previous reports and the product labeling. Local AEs that do occur with therapy are mostly mild to moderate in nature, transient, and resolve spontaneously or with symptomatic treatment. Local AEs thought to be related to the treatment are clinically manageable and do not result in long-term sequelae, such that their occurrence should not preclude patients from the benefit of OA pain relief with therapy, including continued pain relief with repeat treatment. Based on previous published reports of hylan G-F 20 and our extensive clinical experience, relief of OA knee pain with hylan G-F 20 far outweighs the low risk of local AEs for patients who do not respond to other therapies indicated for the treatment of OA knee pain. [References: 50]

Walton, R. E., I. F. Holton, Jr., and R. Michelich. "Calcium hydroxide as an intracanal medication: effect on posttreatment pain." *Journal of Endodontics.* 29, no. 10(2003): 627-9 UI 14606782.

Calcium hydroxide is advocated as an intracanal medication for various purposes, including prevention of posttreatment symptoms. This study assessed whether calcium hydroxide had a pain-controlling effect at different times when compared with no intracanal medication. One hundred forty patients participated. Conditions diagnosed were pulp/periapical pathosis with or without symptoms. At least partial cleaning and shaping was completed. At random, either Ca(OH)2 plus H2O paste or a dry cotton pellet was placed in the canals of half the teeth, respectively. All teeth were temporized with Intermediate Restorative Material. Patients assessed posttreatment pain up to 48 h as none, mild, moderate, or severe. The pain levels in each test group [Ca(OH)2 versus cotton pellet] at each time period were compared statistically with a multiple-regression analysis. There was no significant difference in posttreatment pain between the two groups at any time period or with any diagnosis

or symptom. The use of calcium hydroxide as an intracanal medication was unrelated to the incidence and/or severity of posttreatment pain.

Wegener, T., and N. P. Lupke. "Treatment of patients with arthrosis of hip or knee with an aqueous extract of devil's claw (Harpagophytum procumbens DC.)." *Phytotherapy Research.* 17, no. 10(2003): 1165-72 UI 14669250.

Preparations made from the secondary tubers of Devil's claw (Harpagophytum procumbens) are successfully used in patients with rheumatic diseases (arthrosis and low back pain). In order to add data on the efficacy and long-term safety of an aqueous extract (Doloteffin; 2400 mg extract daily, corresponding to 50 mg harpagoside), which has been tested successfully in patients with low back pain, an uncontrolled multicentre drug surveillance study for about 12 weeks was conducted in 75 patients with arthrosis of the hip or knee. To standardize the assessment of treatment effects, the Western Ontario and McMaster Universities (WOMAC) osteoarthritis index (10 point scale) as well as the 10 cm VAS pain scale were used. The results of the study revealed a strong reduction of pain and the symptoms of osteoarthritis. There was a relevant improvement of each WOMAC subscale as well as of the total WOMAC index: 23.8% for the pain subscale, 22.2% for the stiffness subscale and 23.1% for the physical function subscale. The WOMAC total score was reduced by 22.9%. VAS pain scores were decreased by 25.8% for actual pain, 25.2% for average pain, 22.6% for worst pain and 24.5% for the total pain score. The physicians reported a continuous improvement in typical clinical findings such as 45.5% for pain on palpation, 35% for limitation of mobility and 25.4% for joint crepitus. Only two cases of possible adverse drug reactions were reported (dyspeptic complaints and a sensation of fullness). Although this was an open clinical study, the results suggest that this Devil's claw extract has a clinically beneficial effect in the treatment of arthrosis of the hip or knee.

Weinman, B. P. "2003 LeTourneau Award. Freedom from pain. Establishing a constitutional right to pain relief." *Journal of Legal Medicine.* 24, no. 4(2003): 495-539 UI 14660323.

Weisel, R. D., et al. "Cardiac metabolism and performance following cold potassium cardioplegia." *Circulation.* 58, no. 3 Pt 2(1978): I217-26 UI 14740705.

The ability of cold potassium cardioplegia (CPC) to preserve cardiac metabolism and performance was evaluated in 68 patients undergoing anoxic arrest for aortocoronary bypass. Forty-five patients (group I) had a single dose of CPC inducing a mean myocardial temperature (MMT) of 32 degrees C/min. Twenty-three patients had multiple doses of CPC and systemic hypothermia to achieve a MMT of 22 degrees C/min. Arterial and coronary sinus sampling 38 minutes after aortic clamp removal permitted calculation of cardiac oxygen extraction, lactate production, CPK and CPK-MB release. Group I patients extracted less oxygen, produced more lactate, and released more CPK and CPK-MB. These indices of cardiac metabolism were found to correlate with anoxic times exceeding 30 minutes, and demonstrated more cardiac damage in group I patients at longer anoxic times. Serial measurements of cardiac output (thermodilution) and left atrial pressure during volume loading permitted construction of myocardial performance curves. Group I patients had a diminished response to volume loading postoperatively. Both the upslope and the highest stroke work attained were lower in group I and inversely related to the anoxic time. All patients made an uneventful recovery, indicating the insensitivity of clinical parameters of myocardial protection. Coronary sinus sampling and hemodynamic monitoring during volume loading permit an objective assessment of myocardial preservation.

Werner, D., et al. "Practicability and limitations of enhanced external counterpulsation as an additional treatment for angina." *Clinical Cardiology.* 26, no. 11(2003): 525-9 UI 14640469.

BACKGROUND: An increasing number of clinical studies indicates reduction of angina and myocardial ischemia by enhanced external counterpulsation (EECP) therapy. However, given the wide range of contraindications and the long duration of treatment, eligibility and practicality issues have not been addressed systematically. HYPOTHESIS: Of all candidates for EECP (patients with drug-refractory angina without possibility of revascularization), the majority either have contraindications or have practical problems complying with the time demands that this therapy imposes. In the rest, EECP leads to satisfactory results. METHODS: During 18 months, every consecutive patient with angina despite medical and interventional therapy was evaluated for EECP at one center. Treated patients underwent a bicycle exercise test and perfusion imaging before and after the standard course of 35 h of EECP. In addition, patients were asked about frequency of angina and nitroglycerin usage before and after EECP, and all patients filled out a final questionnaire 1 year after the end of therapy. RESULTS: Overall, 48 patients were considered candidates for EECP. Of these, 24 were excluded for medical reasons: poor ejection fraction (4), peripheral artery disease (4), anticoagulation (4), and atrial fibrillation (3). Eight further patients declined EECP for lack of time or accommodation. Another 3 of the 16 remaining patients dropped out because of side effects. In the 13 patients who finished the treatment course, weekly anginal episodes were reduced by 48% ($p < 0.05$), on-demand nitroglycerin puffs were reduced by 51% ($p < 0.05$), work capacity was improved by 22% ($p < 0.05$), and the number of reversible perfusion defects in perfusion scans decreased nonsignificantly (-28%). However, 4 of 13 treated patients determined 1 year later that the detriment of loss of time exceeded the benefits of EECP. CONCLUSION: Similar to previous reports, our study confirms the reduction of angina and improvement of work capacity after EECP. However, using established contraindications, approximately two-thirds of patients considered to be candidates had to be excluded, and one-third of the treated patients regarded EECP therapy retrospectively as too time consuming.

Werner, M. U., P. Duun, and H. Kehlet. "Prediction of postoperative pain by preoperative nociceptive responses to heat stimulation." *Anesthesiology.* 100, no. 1(2004): 115-9; discussion 5A UI 14695732.

BACKGROUND: Despite major advances in the understanding of the neurobiologic mechanisms of pain, the wide variation in acute pain experience has not been well explained. Therefore, the authors investigated the potential of a preoperatively induced heat injury to predict subsequent postoperative pain ratings in patients undergoing knee surgery. METHODS: Twenty patients were studied. The burn injury was induced 6 days before surgery with a contact thermode (12.5 cm2, 47 degrees C for 7 min). The sensory testing, before and 1 h after the injury, included pain score during induction of the burn, secondary hyperalgesia area, thermal and mechanical pain perception, and pain thresholds. Postoperative analgesia consisted of ibuprofen and acetaminophen. Pain ratings (visual analog scale) at rest and during limb movement were followed for 10 days after surgery. RESULTS: The burn injury was associated with development of significant hyperalgesia. There was a significant correlation between preoperative pain ratings during the burn injury and early (0-2 days, area under the curve) and late (3-10 days, area under the curve) postoperative dynamic pain ratings during limb movement. CONCLUSION: The results of this study suggest that the pain response to a preoperative heat injury may be useful in research in predicting the intensity of postoperative pain. These findings may have important implications to identify patients at risk for development of chronic pain and to stratify individuals for investigations of new analgesics.

White, P., et al. "The placebo needle, is it a valid and convincing placebo for use in acupuncture trials? A randomised, single-blind, cross-over pilot trial." *Pain.* 106, no. 3(2003): 401-9 UI 14659523.

The issue of what constitutes an effective and realistic acupuncture placebo control has been a continuing problem for acupuncture research. In order to provide an effective placebo, the control procedure must be convincing, visible and should mimic, in all respects, apart from a physiological effect, the real active treatment. The 'Streitberger' needle might fulfil these criteria and this paper reports on a validation study. This was a single-blind, randomised, cross-over pilot study. Patients were drawn from the orthopaedic hip and knee, joint replacement waiting list. Intervention consisted of either 2 weeks of treatment with real acupuncture followed by 2 weeks on placebo, or vice versa. The prime outcome was a needle sensation questionnaire and there was a range of secondary outcomes. Thirty-seven patients were randomised and completed treatment. Groups were well balanced at baseline. No significant differences between groups or needle types were found for any of the sensations measured. Most patients were unable to discriminate between the needles by penetration; however, nearly 40% were able to detect a difference in treatment type between needles. No major differences in outcome between real and placebo needling could be found. The fact that nearly 40% of subjects did not find that the two interventions were similar, however, raises some concerns with regard to the wholesale adoption of this instrument as a standard acupuncture placebo. Further work on inter-tester reliability and standardisation of technique is highly recommended before we can be confident about using this needle in further studies.

Willis, K. D. "A simple approach to outcomes assessment of the therapeutic and cost-benefit success rates for spinal cord stimulation therapy." *Anesthesiology Clinics of North America.* 21, no. 4(2003): 817-23 UI 14719722.

SCS was found to be cost-effective and therapeutically effective in this study for a majority of patients who had successful trial screening and were determined to be suitable candidates for SCS therapy. This is consistent with prior research if not slightly more encouraging, because typically half of the patients implanted with SCS reported 50% or more pain relief. Strikingly, most patients were considered cost successes. Overall, this study provides continued support that spinal cord stimulation offers the medical community an effective treatment for pain and reduces costs associated with the treatment of chronic intractable pain patients.

Woodley, K. S. "Improving ambulatory surgical pain management." *Joint Commission Journal on Quality & Safety.* 30, no. 1(2004): 36-41, 1 UI 14738034.

A surgical pain improvement team used an improvement model to standardize pain management at two hospital-based ambulatory surgery facilities.

Wynne, J., et al. "Myocardial revascularization in patients with multivessel coronary artery disease and minimal angina pectoris." *Circulation.* 58, no. 3 Pt 2(1978): I92-5 UI 14740686.

Mortality risk in coronary artery disease (CAD) is more closely related to angiographic findings of multiple coronary artery obstructions and left ventricular asynergy than to the severity of angina pectoris, the major symptom of CAD. Since coronary revascularization surgery is most frequently performed to relieve chest pain, there are few reports evaluating the results of coronary artery bypass surgery in patients with minimal or no angina pectoris but with anatomically severe disease. From July, 1970, through December, 1976, 844 patients had coronary artery bypass surgery performed at the Peter Bent Brigham Hospital for chronic or unstable angina pectoris. Twenty patients (2.3%) were operated on because of severe coronary obstruction but who had minimal or no angina. Fourteen patients underwent coronary arteriography because of a positive exercise tolerance test, and six because of a prior myocardial infarction. All but one patient had multivessel CAD, and four

patients had significant left main coronary lesions. There was no operative mortality. One late death occurred 5 years postoperatively, for a 5.0% cumulative mortality. Average follow-up has been 34 months (range, 19 to 80 months). Of 12 patients with both pre- and postoperative exercise tests, eight have reverted to normal, and four show a less ischemic response to exercise. Coronary revascularization may have a beneficial effect on the patient with "asymptomatic" but anatomically severe CAD.

Yang, C. P., et al. "Local anesthetic switching for intrathecal tachyphylaxis in cancer patients with pain.[comment]." *Anesthesia & Analgesia.* 98, no. 2(2004): 557; author reply 557-8 UI 14742416.

Yang, X. Y., et al. "Pathologic quiz case: sacral/pelvic mass with lower back pain in a 36-year-old man. Immature plasmacytoma." *Archives of Pathology & Laboratory Medicine.* 128, no. 2(2004): 237-8 UI 14736273.

Ye, Z. Q., et al. "Biofeedback therapy for chronic pelvic pain syndrome." *Asian Journal of Andrology.* 5, no. 2(2003): 155-8 UI 12778328.

AIM: To evaluate the efficacy of biofeedback therapy in patients with chronic pelvic pain syndrome (CPPS). METHODS: From November 2001 to April 2002, patients visiting the Urological Outpatient Clinic of this Hospital were evaluated by means of the National Institute of Health Chronic Prostatitis Symptom Index (NIH-CPSI) and classified by the NIH classification standard. Sixty-two patients of CPPS category III were involved in this study. All patients had been treated by conventional approaches such as antibiotics and alpha-blockers for more than half a year without any improvement. The expressed prostatic secretion results were as follows: WBC 5 to 9/high power field, lipid + approximately +++ and bacterial culture negative. Their NIH-CPSI were 12 approximately 40. All the 62 cases complained of micturitional irritation (frequency, urgency, splitted stream and sense of residual urine), 32 cases, of pain or discomfort at the testicular, penile, scrotal, pelvic or rectal region and 13 cases, of white secretion-dripping. The patients were treated by the Urostym Biofeedback equipment (Laborie Co., Canada) 5 times a week for 2 weeks with a stimulus intensity of 15 mA approximatley 23 mA and duration of 20 minutes. RESULTS: Sixty patients were significantly improved or cured, while no significant improvement in the remaining 2. No apparent side effect was observed. The NIH-CPSI dropped to 6 to 14 with an average reduction of 21 ($P<0.01$). In the 60 improved cases, pain was relieved after 2 approximately 3 treatment courses and other symptoms disappeared after 4 approximately 5 courses. CONCLUSION: Biofeedback therapy is a safe and effective treatment for CPPS. Large randomized clinical trials are needed to confirm its efficacy and to explore the mechanism of action.

Zarbock, S. "Are we listening to our patients in pain?" *Jaapa/Journal of the American Academy of Physician Assistants.* 16, no. 9(2003): 9-10 UI 14758690.